



## Rainy Season Work Procedure (AA-QPR-053)

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## Revision Status

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APPENDIX A      ALARM LEVEL ESCALATION FLOWCHART AND WEATHER WEBSITES

APPENDIX B      INCIDENT AND EMERGENCY CONTACTS

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## 1 WORK PROCEDURE PURPOSE AND USE

This Rainy Season Work Procedure has been written to aid in the rapid response required by Ashghal and Baladiya to control and mitigate the impacts caused by a heavy rainfall event. It is established to serve the population of all Qatar Municipalities, to protect them from flood events as well as to control the sewage flow in Pumping Stations and Sewage Treatment Plants during heavy rain.

The Work Procedure outlines how to escalate rainfall event response from Business-as-Usual to Alert to Incident to Emergency response. Flowcharts and tables outlining response requirements are included.

The scope focuses on the Public Works Authority (PWA) Assets Affairs, Drainage Networks Operation and Maintenance (DNO&M) Department activities during days with potential or actual heavy rainfall, and Baladiya activities. Coordination with PWA Roads Maintenance, PWA Infrastructure Affairs and PMCs is included, whose response is aligned to the event triggers and escalation described in this Procedure.

### How to use this Work Procedure...

This Rainy Season Work Procedure is always active. Role holders named in this Procedure should familiarise themselves with this Procedure **before** an Alert, Incident or Emergency. **Read** it, and **exercise** it. The main body of the Procedure contains information on the approach taken to event response by Ashghal Assets Affairs and Baladiya, and is supported by numerous Appendices.

Before and during a heavy rainfall event refer to the Flowcharts in **Appendix A** which outline actions to be taken during each phase of Alarm escalation. The escalation Flowchart outlines generic responses; however it is acknowledged that actual responses will be event and context specific. **Appendix B** provides important communication information for notifications. An additional Appendix provides information regarding asset information and distribution of resources and equipment by various Drainage Networks Operations and Maintenance Sections.

For Incidents or Emergencies involving Ashghal drainage asset failure, the relevant Ashghal asset Contingency Plans should be referenced in addition to this Procedure. Wherever possible, actions proposed in this Work Procedure are aligned to corporate policies and procedures for crisis/emergency response.

**This October 2018 v16 version is an annual update of this document for the 2018-19 Rainy Season.**

## 2 INTRODUCTION

Ashghal Drainage Networks Operations and Maintenance (DNO&M) is responsible for operating and maintaining public drainage infrastructure within the State of Qatar. A key element of the drainage asset base is the Surface Ground Water (SGW) network, which has been built over many decades to collect groundwater and surface water and transfer this via a gravity and pumped network to discharge to sea. Significant capital investment is being progressed on the existing network to meet modern design standards, and the network is expanding at pace to accommodate Qatar's population growth.

During a heavy rainfall event there is potential for elements of the SGW network to underperform, resulting in flooding events which adversely impact communities, the environment and assets. Baladiya has a responsibility to respond to requests to remove rainwater accumulated on local streets within all eight municipal areas. For this reason the flood mitigation activities of Ashghal and Baladiya need to be closely coordinated.

This Work Procedure has been written to aid in the response required by Ashghal and Baladiya to control and mitigate the potential impacts caused by a heavy rainfall event. The primary objective of this Procedure is to assist in maintaining required levels of service to customers through appropriate management of Incident and Emergency situations, effective stakeholder coordination and communication, rapid reinstatement of asset operations and minimised health and environmental impacts.

This procedure was established historically based on "Rain Emergency Committee Guideline" policies, as well as previous years experiences relating to heavy rain days. It is subject to revision by Ashghal and Baladiya every year ahead of September based on previous year experiences, new development of infrastructure that affects the SGW Network, and Ashghal and Baladiya policy updates.

The Procedure describes how DNO&M and other agencies should escalate potential and actual rainfall event response from:

- a **Business-as-Usual** scenario, to
- an **Alert**, to
- an **Incident**, and finally to
- an **Emergency**.

The Procedure comprises 13 sections and is supported by three Appendices as follows: **Section 1** - A brief overview of the purpose of this Procedure and its use; **Section 2** - An introduction and outline of the overall Procedure; **Section 3** - Important terms abbreviations and definitions; **Section 4** - An outline of organizational arrangements of Ashghal Assets Affairs, Baladiya and the government appointed Rainy Season Emergency Committee; **Section 5** - Roles and responsibilities of Ashghal personnel (particularly DNO&M) for Rainy Season including temporary emergency roles, and roles and responsibilities for Baladiya; **Section 6** - Information on escalation of situations from Business-as-Usual through to Emergency; **Section 7** - Emergency response by Ashghal Operations and Maintenance Sections and Baladiya; **Section 8** – Ashghal and Baladiya coordination, and Roads Maintenance and Ashghal Infrastructure Affairs PMC interaction with DNO&M; **Section 9** – Emergency Management and the Key Assessment Team; **Section 10** - A discussion on Recovery; **Section 11** - Outline of communications approach; **Section 12** - Discussion on documents and records; **Section 13** - An overview of Incident and Emergency training and reporting requirements and post situation analysis for learning and improvement; **Appendix A** - Alarm Level Escalation Flowchart and weather websites; **Appendix B** - Detailed notification information; **Appendix C** - Rainy Season distribution of assets, equipment and resources and Underpass Operational Response.

### 3 DEFINITIONS AND ABBREVIATIONS

The definitions in the table below refer to terms used throughout this Work Procedure. They are provided here for clarity as to how these terms are interpreted in the context of DNO&M, which may differ from application of these terms in other operational settings and across different fields of emergency management.

Term	Definition
AA	Assets Affairs
AE	Area Engineer
Alarm Level	A defined level of organisational response relating to the severity of a situation, to inform escalation of activities/situational response.
Alert	More than 33% probability of rainfall OR Qweather radar displays minimum “yellow” ( $\geq \text{dBz } 28.0$ ) rainfall intensity ( $\geq 2\text{mm/hour}$ ) near communities or significant infrastructure (Alarm Level 1)
Business-as-Usual (BAU)	The normal execution of standard functional operations within Ashghal Drainage Operations and Maintenance, particularly in contrast to an operational abnormality
CAA	Civil Aviation Authority
CC	Centralised Control Section
CMT	Contract Management Team
DN	Drainage Networks
DNMC	Drainage Networks Management Centre
DNO&M	Drainage Networks Operations and Maintenance
E&CS	Emergency and Customer Services Section
EAMS	Enterprise Asset Management System
ECC	Emergency Coordination Centre
EM	Emergency Manager
Emergency	A situation where the rainfall event flooding threatens loss of Ashghal asset service and/or damage to agency reputation(s) (Alarm Level 3)
ERM	Enterprise Risk Management
ES	Engineering Services
FMP	Flooding Mitigation Plan
FPS	Flooding Prevention Scheme (civil works programme for Hotspots)
FW	Fire Warden
GIS	Geographical Information System
HCSW	House Connections and Secondary Works Section
HoS	Head of Section
HR	Human Resources
IM	Incident Manager (Drainage Department, Head of Section)
Incident	A forecast for heavy rainfall OR actual rainfall event exceeding 10mm within 24hrs (Alarm Level 2)
MDOM	Manager Drainage Operations and Maintenance
AMDOM	Assistant Manager Drainage Operations and Maintenance
MED	Mechanical Equipment Department of Baladiya
MHoS	Monitoring Head of Section
MME	Ministry of Municipality and Environment
MRM	Manager Roads Maintenance
NCC	National Command Center

Term	Definition
PMC	Programme Management Consultant
PS	Pumping Stations
PWA	Public Works Authority (of Qatar, also named as Ashghal)
QMD	Qatar Meteorology Department (of CAA)
RDM	Roads Duty Manager
RMC	Roads Management Centre
RMD	Roads Maintenance Department
SE	Senior Engineer
SGW	Surface Ground Water
SF	Site Foreman
SIC	Sewer Inspection and Cleaning Framework
STW	Sewage Treatment Works
THoS	Treatment Head of Section
TSE	Treated Sewage Effluent
TWN	Treated Water Networks
WHoS	Workshops Head of Section

## 4 BUSINESS-AS-USUAL ORGANISATION ARRANGEMENTS

### 4.1 Ashghal Assets Affairs Organisation

The organisation chart below (Figure 4.1) illustrates the current organisation structure as at mid-2017 within Assets Affairs and is provided as a background to role requirements during Incident and Emergency response.

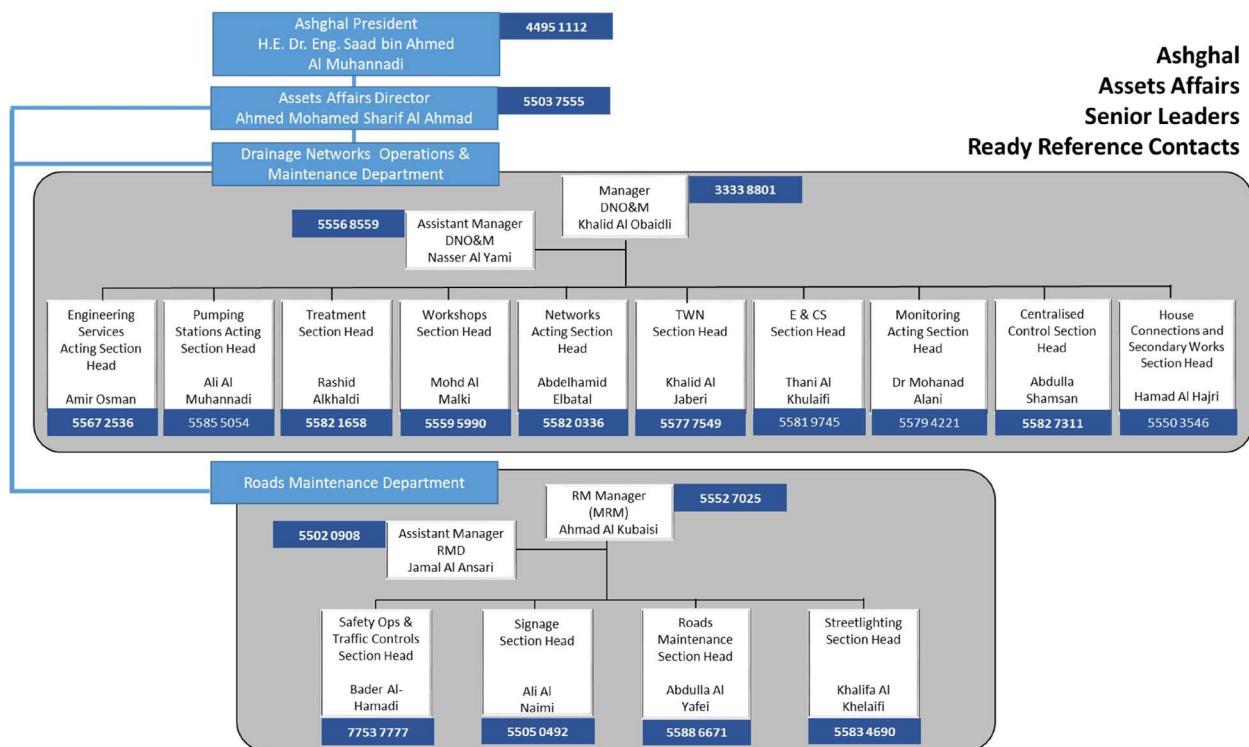


Figure 4.1  
Assets Affairs Organisation Chart

Ashghal staff, of which there are over 650 within Assets Affairs, are supplemented by staff from a range of contracted outsource partners across the Sections. These relationships are managed by Senior Engineers where required. In support of the field teams are the personnel in the Control Room who manage operational activities and SCADA.

### 4.2 Ashghal Executive Management and Decision Making

The DNO&M Manager and the Roads Maintenance Manager report to the Assets Affairs Director, who in turn reports to the President of Ashghal. The DNO&M Manager, Roads Maintenance Manager, Assets Affairs Director and the President all have roles to play in the successful execution of this Work Procedure for different situations and/or failure responses. They become key decision makers on Incident and Emergency response. Executive leadership during Incident and Emergency response is vital to ensure authorisation of response actions and access to emergency funds and wider government agency support. The DNO&M Manager and the Roads Maintenance Manager have Assistant Managers and Section Heads that will be

called upon to ensure the successful execution of this Work Procedure. Where a Section Head is not named in this Work Procedure they will still be required to undertake tasks as assigned to them to support Incident and Emergency response.

#### 4.3 Ashghal Role Coverage by Deputies

Deputies must be named when people are on leave, in accordance with Ashghal practice. This will provide cover to Assets Affairs so that roles identified in this Procedure are taken up even if normal role holders are unavailable. Clear notification of Deputy arrangements is important, and is the responsibility of the incumbent in role.

#### 4.4 Baladiya Organisation

Baladiya has a responsibility to respond to customer requests to remove rainwater accumulated on local streets within all eight municipal areas. For this reason the activities of Ashghal Assets Affairs and Baladiya need to be closely coordinated for efficient response to flooding issues associated with rainfall. The organisation chart below (Figure 4.2) illustrates the high-level organisation structure of Baladiya relating to Rainy Season and is provided as a background to role requirements during Incident and Emergency response.

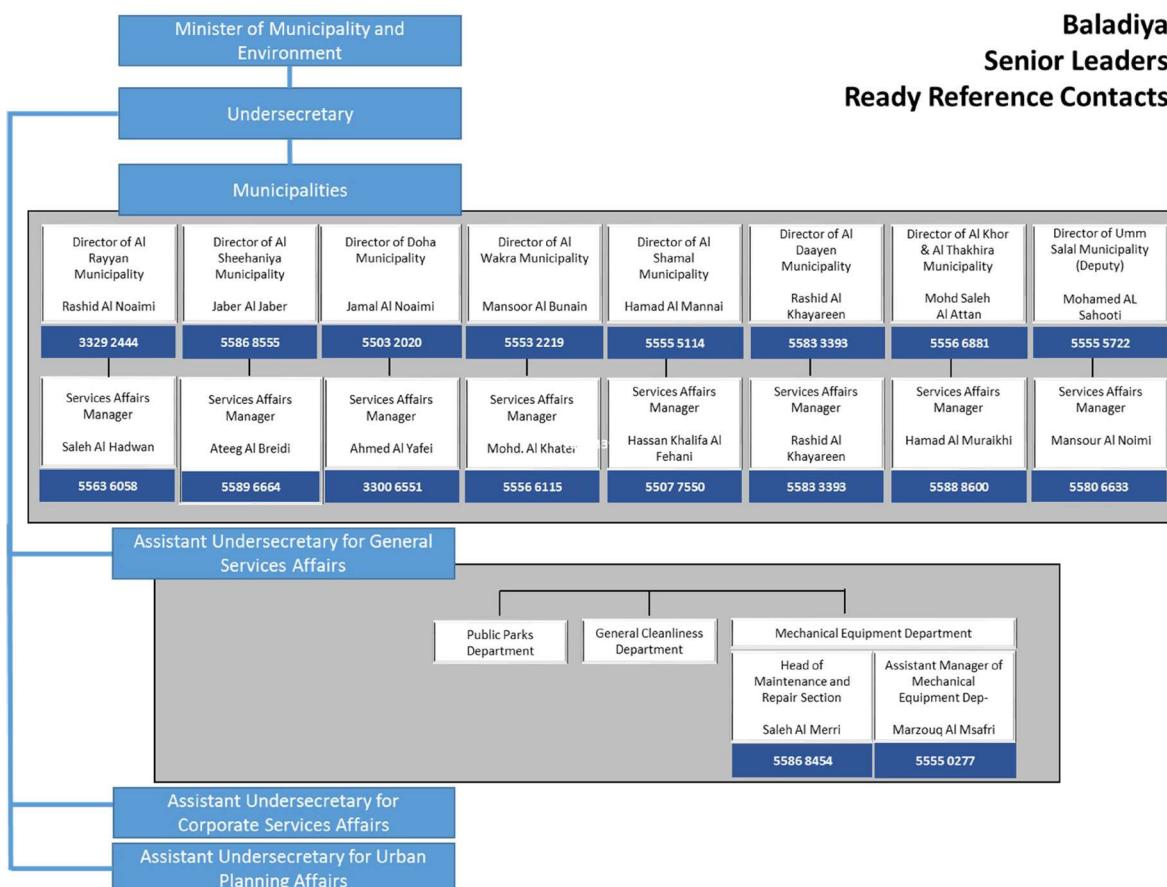
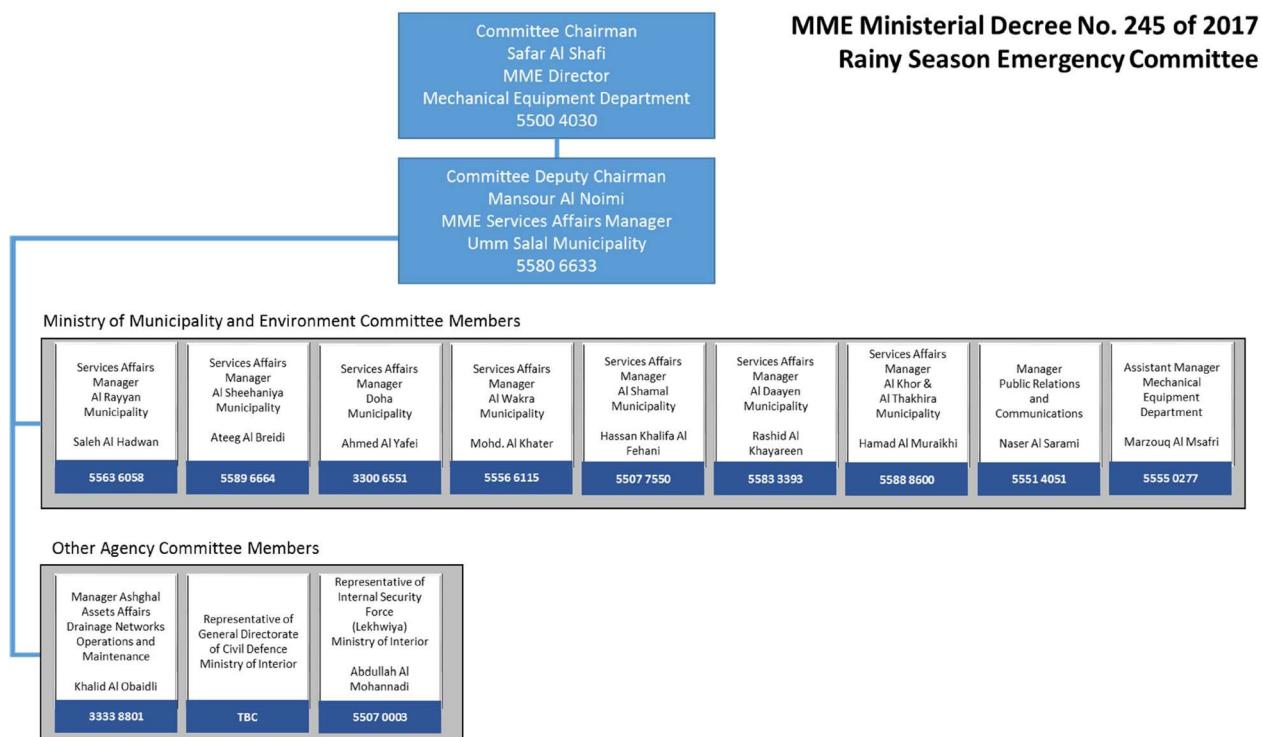


Figure 4.2  
Baladiya Organisation Chart

#### 4.5 MME Rainy Season Emergency Committee

Under the MME Ministerial Decree No. 245 of 2017, the government has formed a Joint Committee to combat rainwater emergencies and risks, known as the Rainy Season Emergency Committee. Membership comprises representatives from MME, Ashghal, Civil Defence and Lekhwiya, as shown in Figure 4.3 below.



**Figure 4.3**  
**MME Rainy Season Emergency Committee**

The Committee has the following mandate from government:

1. Develop an approach (procedure) to manage accumulated rainwater and associated risks
2. Develop a strategic plan to mitigate damage and risks resulting from rainwater (including problems and proposed solutions)
3. Coordinate and cooperate with the relevant parties in the State of Qatar
4. Investigate the readiness of Municipalities and responsible agencies to manage rainwater emergencies and risks.

## 5 ROLES AND RESPONSIBILITIES

### 5.1 Assets Affairs **Business As Usual** Role Responsibilities

All staff within Ashghal have a role to play in successful management of situations that could escalate to an Incident or Emergency situation, in line with their commitment to Ashghal values (we lead, we care, we deliver). The table below outlines fundamental emergency response responsibilities of relevant permanent Ashghal roles, and is not intended to be exhaustive. The responsibilities are articulated here to remove any ambiguity around deemed appropriate tasks for each role.

Permanent Ashghal Role	Responsibilities
All Staff	<ul style="list-style-type: none"> <li>Become familiar with basic emergency procedures, identified actions and contacts</li> <li>Inform Engineers and/or HoS on discovery of any potential problems</li> </ul>
Ashghal President	<ul style="list-style-type: none"> <li>Provide Ashghal leadership and executive authorization for Emergency Management</li> <li>Participate in decision making forums</li> <li>Manage Ministerial and other inter-government communications and relationships supported by Assistant President</li> </ul>
Assets Affairs Director	<ul style="list-style-type: none"> <li>Provide AA leadership and executive authorization for Emergency Management</li> <li>Advocate for Assets Affairs Emergency Management funding</li> <li>Promote consistent Assets Affairs Emergency Management practice across Drainage and Roads Departments</li> <li>Manage Presidential communications</li> <li>Support Drainage and Roads Department Managers in decision making forums</li> <li>Leverage resources to aid response and mitigate potential impacts</li> </ul>
Manager DNO&M (MDOM) and Manager Roads Maintenance (MRM) (and Assistant Managers)	<ul style="list-style-type: none"> <li>Provide relevant O&amp;M Department leadership and authorization around Emergency Management supported by the Assistant Department Manager</li> <li>Share Department rosters with each other for visibility of resource availability</li> <li>Advocate for O&amp;M Emergency Management funding</li> <li>Promote consistent O&amp;M Emergency Management practice across Departments</li> <li>Manage Assets Affairs Director O&amp;M Department communications</li> <li>Support Heads of Section in decision making forums</li> <li>Leverage resources to aid response and mitigate potential impacts</li> </ul>
Heads of Section (HoS)	<ul style="list-style-type: none"> <li>Seek information, from all sources Qatar-wide including field-based contractors, on occurrence of any rainfall anywhere in Qatar and share with DNO&amp;M SCADA Team</li> <li>Populate and commit to the Incident Manager Roster</li> <li>Manage staff rosters to provide required cover for Business As Usual, Alert, Incident and Emergency response, and consolidate into one up-to-date Department roster</li> <li>Manage implementation of contingency and mitigation projects</li> <li>Monitor staff performance and well-being</li> <li>Participate in emergency management training exercises</li> <li>Maintain the Emergency Coordination Centre (ECC) in readiness for an event</li> </ul>
Flood Mitigation Plans (FMPs) Area Managers and Zone Coordinators	<ul style="list-style-type: none"> <li>Meet regularly including with Contractors managing Hotspots</li> <li>Support improvement of Area and Zone management. Share lessons learned from previous events.</li> <li>Review Flood Mitigation Plans with Contractor</li> <li>Become familiar with Area, Zones and Hotspots</li> </ul>

Permanent Ashghal Role	Responsibilities
Senior Engineers (SE) and Drainage/Roads Personnel nominated to support each Baladiya Municipality	<ul style="list-style-type: none"> <li>Monitor asset/system performance; implement redundancy provisions as required</li> <li>Evaluate situations that may require investigation and outline requirements</li> <li>Monitor situations and undertake remedial actions/repairs as required/approved</li> <li>Ensure coordination with Baladiya and Contractors - understand local hotspots and develop mitigations, review Flood Mitigation Plans (FMPs) for Zones, complete gully cleaning, provide current construction project information, provide equipment and contact lists</li> <li>Meet with the Baladiya Services Affairs Managers ahead of and during the Rainy Season to establish good coordination/communication and confirm mutual aid arrangements</li> </ul>
Site Foreman (SF)	<ul style="list-style-type: none"> <li>Support SE by monitoring asset performance through visual inspection</li> </ul>

## 5.2 Assets Affairs **Alert** Role Responsibilities

In addition to the permanent role responsibilities described above, a number of additional responsibilities arise for Ashghal role holders on declaration of Alert, as outlined in the table below. This acknowledges that activities during an Alert differ from routine management and operational delivery.

Permanent Ashghal Role	Responsibilities
DNO&M SCADA Team	<ul style="list-style-type: none"> <li>Inform rostered Incident Manager and MDOM of potential or actual occurrence of rain</li> <li>Notify "Alert" in accordance with this Procedure</li> <li>Provide regular updates on weather and actual rainfall data including location</li> </ul>
Nominated DNO&M Incident Manager  <b>(role not activated at Alert)</b> <b>DNO&amp;M Head of Section</b> <b>(weekly Rainy Season roster)</b>	<ul style="list-style-type: none"> <li>Review available weather condition information</li> <li>Be prepared to relocate rapidly to the Emergency Coordination Centre (ECC) on potential escalation</li> <li>Be available for phone communication at all times</li> </ul>
Manager DNO&M (MDOM) (and Assistant Manager)	<ul style="list-style-type: none"> <li>Review available weather condition information</li> <li>Maintain communication with DNO&amp;M SCADA Team in readiness for potential escalation</li> </ul>
Manager Roads Maintenance (MRM) (and Assistant Manager)	<ul style="list-style-type: none"> <li>Review available weather condition information</li> <li>Maintain communication with MDOM in readiness for potential escalation</li> </ul>
Flood Mitigation Plans (FMPs) Area Managers	<ul style="list-style-type: none"> <li>Liaise with Incident Manager to confirm required level of mobilisation</li> <li>Confirm Zone Coordinator availability</li> <li>Confirm Contractor support in place for Zones through Zone Coordinators</li> <li>Ensure implementation of Contractor FMPs for each Zone within Area</li> <li>Area Managers be prepared to relocate to the Emergency Coordination Centre (ECC)</li> </ul>
Flood Mitigation Plans (FMPs) Zone Coordinators	<ul style="list-style-type: none"> <li>Liaise with Area Manager to confirm required mobilisation</li> <li>Confirm Engineer/Inspector availability</li> <li>Ensure implementation of Contractor FMP on site at Zone Hotspots to the required level</li> <li>Report regularly to Area Manager on readiness</li> <li>Coordinate activities of Engineers and Inspectors within each Area and Zone, including readiness of pumps (tested), tankers and other mitigations</li> </ul>

Permanent Ashghal Role	Responsibilities
Roads Duty Manager <b>RDM</b>	<ul style="list-style-type: none"> <li>Review available weather condition information</li> <li>Be prepared to relocate rapidly to the Emergency Coordination Centre (ECC) on potential escalation</li> <li>Be available for phone communication at all times and liaise with nominated DNO&amp;M Incident Manager in readiness for escalation to Incident</li> </ul>
DNO&M Section Heads, Senior Engineers (SE), Inspectors and Drainage/Roads Personnel nominated to support each Baladiya Municipality	<ul style="list-style-type: none"> <li>Refer to and act on the actions outlined in Section 7 of this Procedure and the FMPs, following the direction of Managers (Section and/or Area)</li> <li>Maintain coordination with Baladiya</li> <li>Seek information, from all sources Qatar-wide including field-based contractors, on occurrence of any rainfall anywhere in Qatar and share with DNO&amp;M SCADA Team</li> <li>Review available weather condition information and consider potential impact on local hotspots</li> <li>Review rain event readiness and check asset, equipment and resource availability, including implementing standby arrangements as agreed and informing Heads of Section of asset availability limitations/constraints</li> <li>Communicate with key Contractors and place on standby as appropriate</li> <li>The nominated DNO&amp;M Section Head should be prepared to relocate rapidly to the National Command Centre (NCC) on potential escalation to Incident</li> </ul>
RMD Section Heads	<ul style="list-style-type: none"> <li>Seek information, from all sources Qatar-wide including field-based contractors, Roads Duty Engineers and Inspectors, on occurrence of any rainfall anywhere in Qatar and share with Roads Duty Manager and DNO&amp;M SCADA Team</li> <li>Review available weather condition information and consider potential impact on traffic</li> <li>Review rain event readiness and check asset, equipment and resource availability, including implementing standby arrangements as appropriate and informing Roads Duty Manager of asset availability limitations/constraints</li> </ul>

### 5.3 Assets Affairs Heavy Rainfall Incident Roles and Responsibilities

In addition to the permanent roles described above, a number of temporary roles will be established within Assets Affairs to manage a rainfall related Incident, as outlined in the table below. These roles acknowledge that management of an Incident differs from routine management. The presence of temporary new roles in the organisation following declaration of an Incident awakens staff and external agencies to the presence of a threatening situation that requires special focus, attention and resources to resolve.

Role under Incident	Responsibilities
DNO&M SCADA Team	<ul style="list-style-type: none"> <li>Inform MDOM of potential or actual occurrence of heavy rain</li> <li>On MDOM confirmation notify “Incident” in accordance with this Procedure, then notify Incident Manager name and contact number</li> <li>Provide regular updates on weather and actual rainfall data including location</li> </ul>
Manager DNO&M <b>MDOM</b> (supported by Assistant Manager)	<ul style="list-style-type: none"> <li>Declare an “Incident” and instruct DNO&amp;M SCADA Team to inform in accordance with this Procedure</li> <li>Identify and notify key stakeholders, such as insurers and NCC</li> <li>Provide routine status reports to the Assets Affairs Director</li> <li>Jointly prepare media release with MRM for AA Director review prior to submission to Ashghal Corporate PR</li> <li>Direct involvement of wider DNO&amp;M resources as required</li> </ul>
Manager Roads Maintenance <b>MRM</b> (supported by Assistant Manager)	<ul style="list-style-type: none"> <li>Identify and notify stakeholders, including Roads Maintenance Department</li> <li>Provide routine status reports to the Assets Affairs Director</li> <li>Jointly prepare media release with MDOM for AA Director review prior to submission to Ashghal Corporate PR</li> <li>Provide wider RMD resources as required</li> </ul>
Incident Manager <b>DNO&amp;M Head of Section (weekly Rainy Season roster)</b>	<ul style="list-style-type: none"> <li>Cease routine O&amp;M activities. Implement actions outlined in Section 7 of this Procedure.</li> <li>Locate to the Emergency Coordination Centre (ECC) and activate the ECC</li> <li>Contact the rostered Area Managers, Roads Duty Manager and Baladiya Representatives to ensure their attendance at ECC</li> <li>Ensure that the Ashghal Contact Centre is aware of the situation and its status. Work with Ashghal Corporate Public Relations to ensure consistency of messaging.</li> <li>Monitor Area Manager implementation of FMPs across Zone Hotspots</li> <li>Seek feedback from Emergency and Customer Services on resolution of customer complaints</li> <li>Seek feedback from Workshops and Pump Stations on operation of planned mitigations at Underpasses, Pump Stations and other critical locations</li> <li>Where mitigations are overwhelmed, in the first instance direct additional support from Emergency and Customer Services, Workshops and Baladiya for implementation. Follow up with Area Managers as a last resort to safeguard execution of FMPs atHotspots.</li> <li>Share information with MDOM regularly, including the status of the Incident along with progress and effectiveness of mitigation actions by all parties</li> <li>Request involvement of wider resources as required</li> <li>Consider the system-wide implications of the Incident and assess potential “knock on effects” and likelihood of escalation</li> <li>Confirm event escalation and de-escalation with MDOM and notify SCADA Team</li> </ul>
Area Managers	<ul style="list-style-type: none"> <li>Attend ECC on Incident and act as focal point for Area status and receiving and recording Zone information. Act as point of liaison within ECC for Zone Coordinators within Area.</li> <li>Provide status updates on Zone FMP implementation to Incident Manager, including Incident impact across all Zone Hotspots within each Zone of the Area</li> <li>Support Zone Coordinators to secure additional resources and equipment as required, beyond that specified in each Zone FMP, either from adjacent Zones/Areas (if low risk), or from Emergency and Customer Services or Workshops</li> <li>Share new ECC requests for information with Zone Coordinators and communicate Incident Manager directives to Zone Coordinators relating to response and recovery</li> </ul>

Role under Incident	Responsibilities
Zone Coordinators	<ul style="list-style-type: none"> <li>• Confirm Contractors activate FMP mitigations on rainfall and accumulated rainwater</li> <li>• Prioritise Zone response and recovery</li> <li>• Coordinate activities of Engineers and Inspectors within each Zone</li> <li>• Routinely report to Area Manager in ECC on performance of Zone Hotspot activation, mitigations and interventions</li> <li>• Secure additional required resources and equipment from Contractor and via Area Manager in ECC as required</li> <li>• Take action on new ECC requests from Area Manager</li> <li>• Report on closure of Hotspots (existing and new)</li> <li>• Ensure Engineers/Inspectors patrol Zone, record and report issues, share improvement suggestions, and maintain records of Contractor activities to support invoice reconciliation</li> </ul>
<b>Roads Duty Manager</b> <b>RDM</b> <b>(Represents Roads Department at ECC)</b>	<ul style="list-style-type: none"> <li>• Attend the ECC as the Roads Representative</li> <li>• Provide Roads Traffic Management, vehicles and equipment support</li> <li>• Mobilise the Roads Emergency Team and relevant roads maintenance procedures relating to heavy rainfall events</li> <li>• Review and approve recommended response strategies from the Roads Emergency Team in relation to road safety and traffic management</li> <li>• Ensure that the required plant and equipment is available and mobilised</li> <li>• Provide routine status reports to the Incident Manager</li> </ul>
DNO&M Section Heads	<ul style="list-style-type: none"> <li>• Refer to and act on the actions outlined in Section 7 of this Procedure</li> <li>• Ensure required plant and equipment is available and mobilized to effect Incident response</li> <li>• Actively seek and share information about the Incident with the Incident Manager and with each other through appropriate technology</li> <li>• Analyze the Incident information as it becomes available and develop prioritized actions to minimize impacts and resolve the Incident</li> <li>• Communicate actions and requirements for additional resources to the Incident Manager</li> <li>• Record rationale for recommended actions and evaluate impact of interventions relevant to each Section</li> <li>• Nominated Section Head attends National Command Centre (NCC)</li> </ul>
RMD Section Heads	<ul style="list-style-type: none"> <li>• Cease routine O&amp;M activities</li> <li>• Analyze the Incident information as it becomes available and develop prioritized RMD actions to minimize impacts and resolve the Incident</li> <li>• Seek and/or develop Traffic Management Support strategies and communicate these to ECC via Roads Duty Manager</li> <li>• Record rationale for recommended actions and evaluate impact of interventions relevant to each Section</li> <li>• Ensure required plant and equipment is available and mobilized to effect traffic management support</li> <li>• Request involvement of wider Roads resources as required</li> <li>• Share information with Roads Duty Manager regularly, including the status of the Incident along with progress and effectiveness of Department actions</li> <li>• Consider the roads network-wide implications of the Incident and assess potential “knock on effects” and likelihood of further escalation</li> </ul>
Senior Engineers (SE) and Drainage/Roads Personnel	<ul style="list-style-type: none"> <li>• Support deployment of operational solutions as instructed by Area Managers and Zone Coordinators (aligned to the FMPs) and the Incident Manager</li> </ul>
Roads Duty Engineers and Inspectors	<ul style="list-style-type: none"> <li>• Support deployment of operational solutions as instructed by Roads Duty Manager</li> <li>• Ensure rostered Roads Engineers follow the instructions of the Roads Duty Manager in support of Roads actions</li> <li>• Provide Traffic Management Services, Vehicles and Equipment to Support DNO&amp;M activities</li> </ul>

#### 5.4 Assets Affairs Heavy Rainfall Emergency Roles and Responsibilities

In addition to the permanent roles described above, a number of temporary roles will be established within Assets Affairs specifically to manage a heavy rainfall event Emergency, as outlined in the table below. These roles acknowledge that management of an Emergency differs from routine management. The presence of temporary new roles in the organisation following declaration of an Emergency awakens staff and external agencies to the presence of a threatening situation that requires special focus, attention and resources to resolve.

Role under Emergency	Responsibilities
DNO&M SCADA Team	<ul style="list-style-type: none"> <li>Inform MDOM of potential or actual occurrence of heavy rain</li> <li>On confirmation by MDOM, notify "Emergency" in accordance with this Procedure</li> <li>Provide regular updates on weather and actual rainfall data including location</li> </ul>
Emergency Manager (EM)  AA Director  or  MDOM	<ul style="list-style-type: none"> <li>Declare an "Emergency" and instruct DNO&amp;M SCADA Team to inform in accordance with this Procedure</li> <li>Instruct full ECC activation, including attendance by the Key Assessment Team (KAT) along with rostered Area Managers, Roads Duty Manager and Baladiya Representatives. Assume control of the ECC.</li> <li>Review and approve recommended emergency response strategies from KAT in relation to significant drainage issues. Review and agree with KAT and SE actions for specific individuals.</li> <li>Request involvement of additional KAT resources and wider Ashghal/Contractor resources and support as required</li> <li>Ensure that the Ashghal Contact Centre is aware of the situation and its status. Work with Ashghal Corporate Public Relations to ensure consistency of messaging, and support preparation of media release for AA Director review.</li> <li>Identify and notify stakeholders including insurers and NCC</li> <li>Directly monitor activities under this Procedure, including role execution by Area Managers and key Sections</li> <li>Provide routine status reports to the Assets Affairs Director</li> <li>Confirm event de-escalation with AA Director and notify SCADA Team</li> </ul>
Roads Maintenance Manager  MRM	<ul style="list-style-type: none"> <li>Attend the ECC, relieve the RDM after appropriate handover, and contribute to Emergency response</li> <li>Review and approve recommended Emergency response strategies from the Road Emergency Team in relation to road safety and traffic management</li> <li>Ensure required plant and equipment is available and mobilised</li> <li>Provide routine status reports to the Assets Affairs Director</li> </ul>
Key Assessment Team (KAT)  Emergency and Customer Services HoS Workshops HoS Pump Station HoS Drainage Networks HoS Engineering HoS MRM (or Assistant Manager)	<ul style="list-style-type: none"> <li>Attend Emergency Coordination Centre (ECC)</li> <li>Confirm KAT membership is appropriate for the Emergency</li> <li>Actively seek and share information about the Emergency</li> <li>Analyze the Emergency situation information and develop prioritized actions to minimize impacts and resolve the Emergency. Clearly communicate recommended actions for teams and specific individuals to the Emergency Manager (EM).</li> <li>Ensure required plant and equipment is available and mobilized, working through Area Managers to secure Area Contractor resources</li> <li>Consider and communicate requirements for additional resources</li> <li>Assess need for site inspections by KAT or others</li> <li>Consider the system-wide implications of the Emergency and assess potential secondary failure scenarios</li> <li>Maintain records of key decisions. Record rationale for actions and evaluate impact of interventions.</li> </ul>

Role under Emergency	Responsibilities
Area Managers	<ul style="list-style-type: none"> <li>Attend ECC and act as focal point for Area status and receiving and recording Zone information. Act as point of liaison within ECC for Zone Coordinators within Area.</li> <li>Provide status updates on Zone FMP implementation to Emergency Manager and KAT, including Emergency impact across all Zone Hotspots within each Zone of the Area</li> <li>Support Zone Coordinators to secure additional resources and equipment as required, beyond that specified in each Zone FMP, either from adjacent Zones/Areas (if low risk), or from Emergency and Customer Services or Workshops</li> <li>Communicate Emergency Manager and KAT directives to Zone Coordinators relating to response and recovery</li> </ul>
Zone Coordinators	<ul style="list-style-type: none"> <li>Confirm Contractors activate FMP mitigations on rainfall and accumulated rainwater</li> <li>Implement Emergency Manager and KAT directives within Zone, as instructed by Area Managers, to aid response and recovery</li> <li>Prioritise other Zone response and recovery activities</li> <li>Coordinate activities of Engineers and Inspectors within each Zone</li> <li>Routinely report to Area Manager in ECC on performance of Zone Hotspot activation, mitigations and interventions</li> <li>Secure additional required resources and equipment from Contractor and via Area Manager in ECC as required</li> <li>Report on closure of Hotspots (existing and new)</li> <li>Ensure Engineers/Inspectors patrol Zone, record and report issues, share improvement suggestions, and maintain records of Contractor activities to support invoice reconciliation</li> </ul>
DNO&M Section Heads and RMD Section Heads	<ul style="list-style-type: none"> <li>Refer to and act on the actions outlined in Section 7 of this Procedure</li> <li>Support deployment of operational solutions as instructed by the Emergency Manager</li> <li>Ensure required plant and equipment is available and mobilized to effect Emergency response and traffic management support</li> <li>Actively seek and share information about the Emergency with the KAT and with each other through appropriate technology</li> <li>Seek and/or develop Traffic Management Support strategies and communicate these to the KAT</li> <li>Communicate actions and requirements for additional resources to the KAT</li> </ul>
Senior Engineers (SE) and Drainage/Roads Personnel	<ul style="list-style-type: none"> <li>Support deployment of operational solutions as instructed by Emergency Manager</li> </ul>

## 5.5 Baladiya Incident and Emergency Roles and Responsibilities

Efficient coordination of activities is required between Ashghal and Baladiya to prepare for, respond to and recover from a Rainy Season event. Baladiya role holders will discharge the following responsibilities under Incident and Emergency, as declared by Ashghal notification.

Role under Incident and Emergency	Responsibilities
Services Affairs Managers of 8 Municipalities (Al Shamal, Al Khor and Al Thakhira, Al Daayen, Umm Salal, Al Sheehaniya, Doha, Al Rayyan, Al Wakrah)	<ul style="list-style-type: none"> <li>Activate the Municipality Emergency Room on declaration of Incident or Emergency</li> <li>Implement and manage emergency actions (particularly tanker deployment) according to the relevant Alarm Level.</li> <li>Instruct Baladiya Services on actions to mitigate flooding risk or effects. Supervise allocation of work across Municipalities, including Hotspots as allocated from ECC Incident/Emergency Manager.</li> <li>Liaise with the Baladiya ECC Representative(s), communicating requests for support to mitigate flooding risks/effects to the Ashghal Incident and Emergency Manager</li> <li>Share information regularly on the event and mitigating actions with the Baladiya Representative within the Ashghal ECC (deletion)</li> <li>Ensure customer complaints are addressed and resolved in a timely manner</li> <li>Prepare and submit required event reporting, including assessment of performance.</li> </ul>
Baladiya Representative(s) within Ashghal ECC	<ul style="list-style-type: none"> <li>Rostered Baladiya Representative(s) to attend Ashghal ECC in the event of an Incident or Emergency (deletion). (Baladiya Public Relations will identify a roster of weekly Baladiya Representatives and share details with Ashghal).</li> <li>Share information and coordinate actions with the Baladiya Emergency Room and Services Affairs Managers and report on Ashghal Incident and Emergency Manager decisions as they evolve</li> <li>Liaise with PWA Incident/Emergency Manager to request any additional support to the Municipalities or event escalation, as requested by the Baladiya Services Affairs Managers</li> </ul>
Mechanical Equipment Department (MED)	<ul style="list-style-type: none"> <li>Implement and manage Incident or Emergency actions according to the relevant Alarm Level.</li> <li>Liaise with Baladiya Services Affairs Managers to provide equipment, fuel and other support where required to mitigate flooding risk or effects</li> </ul>

## 5.6 Other External Stakeholders

The table below presents a number of additional stakeholders external to Ashghal who have an emergency response lead or support role around a heavy rainfall event.

External Stakeholder	Interest or General Role
National Command Centre (NCC)	<ul style="list-style-type: none"> <li>Lead agency for Qatar disaster recovery</li> <li>Provide a "hotline" in to the Emergency Coordination Centre at Ashghal</li> <li>Provide coordination of emergency services, including Police for traffic control</li> <li>Provide traffic escort services into areas of interest to Ashghal</li> <li>Have access and powers to instruct provision of resources, equipment, land access, and so forth</li> <li>Provide assistance with public communications</li> </ul>
Kahramaa	<ul style="list-style-type: none"> <li>Lead agency for provision of power and water supply</li> </ul>
Civil Aviation	<ul style="list-style-type: none"> <li>Provide weather forecast information, updated at high frequency</li> </ul>

## 6 SITUATION EVALUATION, ESCALATION AND NOTIFICATION

### 6.1 Alarm Level Escalation

An Alarm Level Escalation framework has been adopted by Assets Affairs DNO&M to evaluate and categorise rainfall events. Ashghal Roads Maintenance and Baladiya Municipalities have aligned actions against the triggers and Alarm Levels below. Figure 6.1 below illustrates the four levels of escalation.

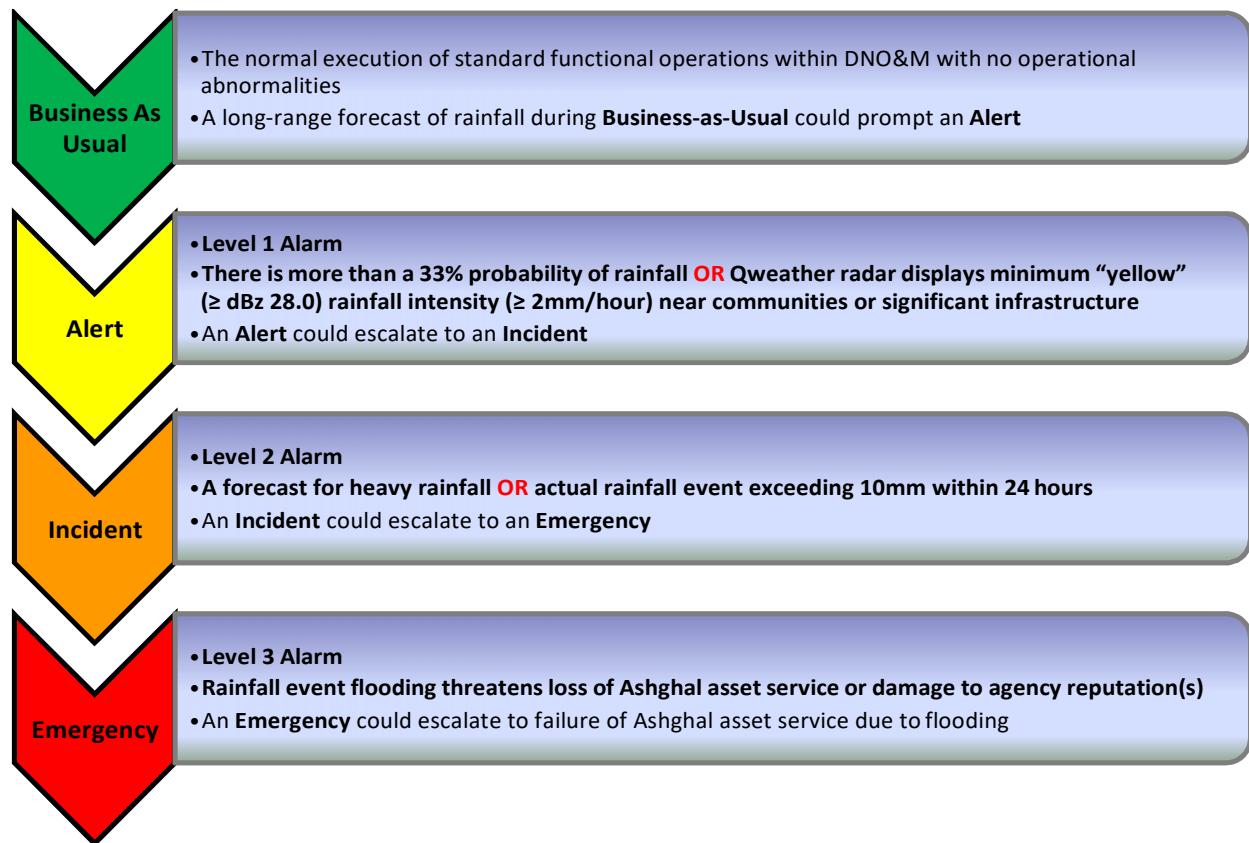


Figure 6.1  
Alarm Level Escalation

The above framework clearly differentiates what represents an Alert, an Incident and an Emergency, and makes explicit the triggers for increasing the Alarm level. An **Alarm Level Escalation** flowchart is presented in Appendix A, along with weather forecast websites and checklists relating to this Procedure. During management of an Incident, key personnel should re-familiarise themselves with this Work Procedure so that they are prepared in the event that the situation escalates to an Emergency.

### 6.2 Alarm Level Notification

Figure 6.2 below illustrates the Assets Affairs notification protocol as the Alarm Level escalates, so that key Ashghal and stakeholder personnel become aware of the situation and the possibility or occurrence of a heavy rainfall event. Appendix B presents contact details for key Ashghal Assets Affairs personnel, and other stakeholders, and indicates who should be contacted in the event of a Level 1, 2 or 3 Alarm.

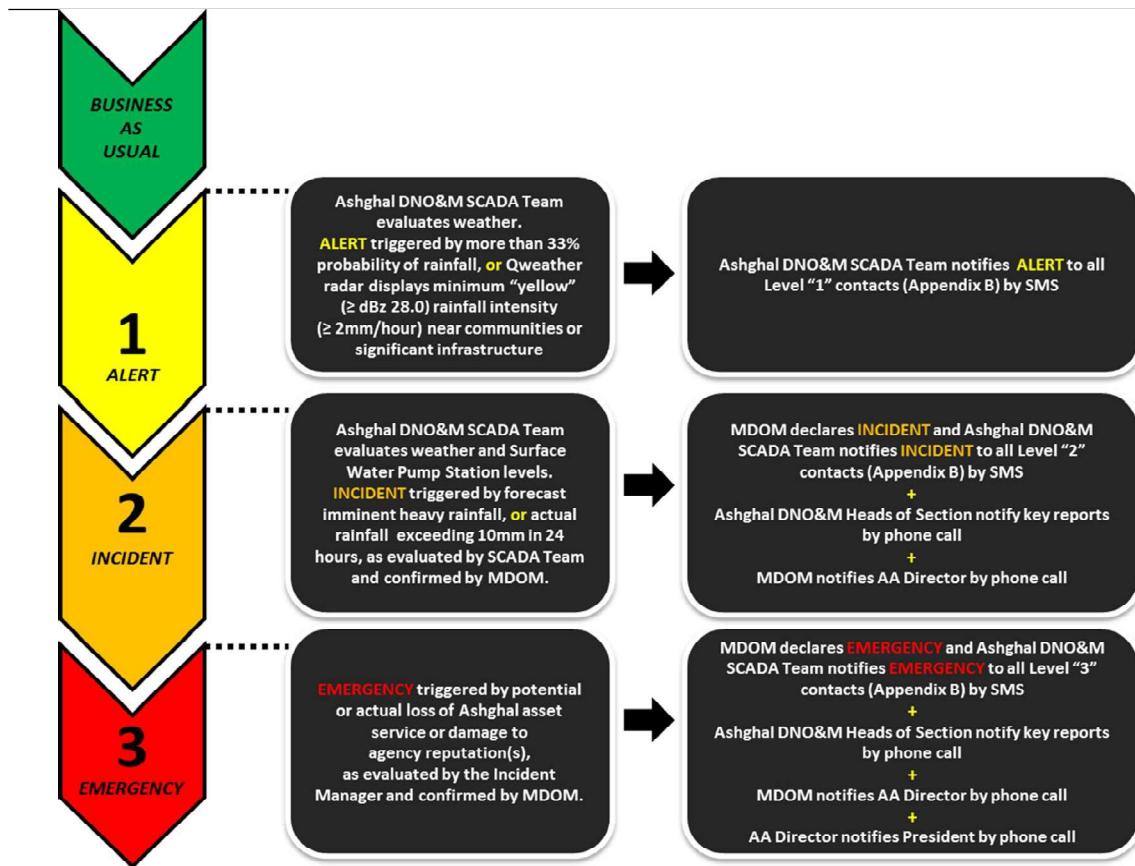


Figure 6.2  
Notification of Alarm Level Escalation

For clarity and standardisation of process, the standard text to be used for **escalation notification** by SMS text is provided in the table below (Section 8.1 of this Procedure outlines pathways for escalation from Incident to Emergency, by Ashghal or by Baladiya).

Alarm Level	Situation	Standard SMS message notification to be issued by SCADA Team
1	<b>ALERT</b>	إعلان حالة التنبية والتاهب لموسم الأمطار. الرجاء تفعيل وتنفيذ العمل بإجراءات الاستجابة لحالة التنبية والتاهب لموسم الأمطار. Rainy Season ALERT. Activate Rainy Season Work Procedure ALERT actions.
2	<b>INCIDENT</b>	إعلان حالة <b>الحوادث</b> لموسم الأمطار . الرجاء تفعيل وتنفيذ العمل بإجراءات ومتطلبات الاستجابة لحالة المرواث. يرجى من مدراء شؤون الخدمات بالبلديات ورؤساء الأقسام بانشغال توجيه فرق العمل واعلام مركز تنسيق الطوارئ في أشغل بالإجراءات المختارة. Rainy Season INCIDENT. Activate Rainy Season Work Procedure INCIDENT actions. Heads of Section (Ashghal) and Services Affairs Managers (Baladiya) mobilize staff. Inform actions to Ashghal Emergency Coordination Centre (Ashghal Incident Manager and Baladiya Representative).
3	<b>EMERGENCY</b>	إعلان حالة <b>الطوارئ</b> لموسم الأمطار. الرجاء تفعيل وتنفيذ العمل بإجراءات ومتطلبات الاستجابة لحالة الطوارئ. يرجى من فريق التقييم الرئيسي التوجه فوراً إلى مركز تنسيق الطوارئ في أشغل دفع مدير الطوارئ. مدراء الطوارئ في البلديات يتلقون مع ممثل البلديات في مركز تنسيق الطوارئ في أشغل. Rainy Season EMERGENCY. Activate Rainy Season Work Procedure EMERGENCY actions. Ashghal Key Assessment Team members to attend Ashghal Emergency Coordination Centre to support Ashghal Emergency Manager. Baladiya Emergency Managers coordinate with Baladiya Representative at Ashghal Emergency Coordination Centre.

During any event, additional non-standard SMS messaging may be sent by the Ashghal DNO&M SCADA Team to provide further event information relevant to either escalation or de-escalation. The message content should be agreed with MDOM or the Incident/Emergency Manager before issue.

After an Incident SMS is issued, a follow up SMS should be issued by the Ashghal DNO&M SCADA Team shortly thereafter with the name and contact mobile phone number of the Incident Manager.

Once the Emergency event is under control and its effects have been substantially alleviated, the EM in consultation with the KAT may downgrade the Emergency to an Incident or Alert and instruct notification of the Alarm Level downgrade by reversing the notification process shown in Figure 6.2.

For clarity and standardisation of process, the standard text to be used for **de-escalation notification** by SMS text is provided in the table below.

Alarm Level	Situation	Standard SMS message notification to be issued by SCADA Team
2	INCIDENT	اعلن خفض حالة موسم الامطار الى حالة الحوادث. استمرار العمل باجراءات الاستجابة لحالة ورؤساء الاقسام بانشغال اخطار فرق العمل ورفع الحوادث. مدراء شؤون الخدمات بالبلديات التقارير. Rainy Season event has been downgraded to INCIDENT. Continue with Rainy Season Work Procedure INCIDENT actions. Heads of Section (Ashghal) and Services Affairs Managers (Baladiya) notify staff.
1	ALERT	اعلن خفض حالة موسم الامطار الى حالة التنبيه. استمرار العمل باجراءات الاستجابة لحالة التنبيه. يرجى من مدراء شؤون الخدمات بالبلديات ورؤساء الاقسام بانشغال تبليغ فرق العمل. Rainy Season event has been downgraded to ALERT. Continue with Rainy Season Work Procedure ALERT actions. Heads of Section (Ashghal) and Services Affairs Managers (Baladiya) notify staff.
-	BUSINESS AS USUAL	اعلن خفض حالة موسم الامطار الى حالة العمل الاعتيادي. استمرار العمل باجراءات العمل كالمعتاد. يرجى من مدراء شؤون الخدمات بالبلديات ورؤساء الاقسام بانشغال تبليغ فرق العمل. Rainy Season event has been downgraded to BUSINESS AS USUAL. Continue with BUSINESS AS USUAL actions. Heads of Section (Ashghal) and Services Affairs Managers (Baladiya) notify staff.

Tests will be run periodically by the SCADA Team of the SMS arrangements to understand response times of individuals to notification, and coverage of nominated Ashghal and stakeholder personnel for each Alarm Level. The SCADA Team have both a mobile device and computer portal for SMS generation.

### 6.3 Notification by Call Centres

Ashghal and Baladiya each have Call Centres which receive Customer complaints and notifications of flooding. The Call Centre numbers are shown in Figure 6.3 below, which also illustrates the mechanism of coordination that exists between Ashghal and Baladiya.

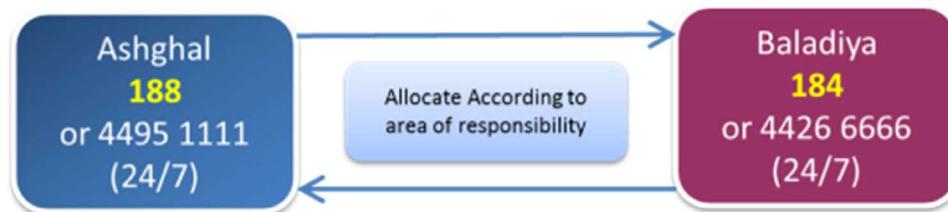


Figure 6.3  
Ashghal and Baladiya Call Centres

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Calls coming into each Call Centre are received by operators who are trained to assess the nature of the situation and then allocate response to the appropriate agency through call transfer. Within Ashghal, Call Centre notifications are assessed for severity and escalated to the relevant Head of Section, who will inform the SCADA Team if the situation is Rainy Season related and an SMS notification has not yet been released.

During an Incident or Emergency, the ECC Incident or Emergency Manager should ensure that the Ashghal Contact Centre is aware of the situation and its status. Consideration should be given to preparation of a script to support Customer Service agents as they field enquiries from members of the public. The Incident or Emergency Manager should work with Ashghal Corporate Public Relations on public communications to ensure consistency of messaging to ensure consistency of messaging.

## 7 SITUATION RESPONSE

### 7.1 General Principles and Constraints

The following general response principles shall be adhered to during the execution of this Procedure and in response to a heavy rainfall event.

Principle	Comment
<b>Early planning importance</b>	Before the Rainy Season commences, Heads of Section will identify any shortage of required facilities, infrastructure or staff and discuss with MDOM mitigations to rectify.
<b>Provision of required equipment</b>	Heads of Section are responsible for the availability of required facilities and infrastructure to run the activities under the execution of this Procedure, including putting in place required Contractor Framework Work Orders.
<b>Command, control and decision making</b>	During an Incident or Emergency the Incident Manager (IM) or the Emergency Manager (EM) is the primary decision maker, as the person who holds the overview of the whole situation. It is imperative that actions are not taken without IM/EM approval, particularly where such actions commit significant resources and equipment that might be better deployed elsewhere.
<b>Continuous response during Incident or Emergency</b>	Under Incident and Emergency key activities are to be kept running 24 hours per day in two or three shifts (three is preferable to avoid staff fatigue). Heads of Sections are responsible to manage the shift requirements.
<b>Provision of backup staff</b>	Heads of Section will be required to assign backup staff to support event response and maintain Assets Affairs operations during heavy rain, in coordination with the needs of all Sections.
<b>Staff safety during event</b>	During heavy rain, all operative staff shall wear the appropriate PPE including a rain jacket and rain boots. The Safety Engineer is responsible for storing sufficient related stock items. Head of Sections are to check the availability and needs of safety items (overalls, jackets, boots, helmets, torches, etc.) and submit their requirements to the Safety Engineer well in advance of the Rainy Season commencing in early September.
<b>Public safety during event</b>	Mitigation of flooding, particularly where this creates a traffic hazard or public health risk, is a key response requirement. Temporary pumping measures must be installed so as to minimize safety hazards, and the Safety Engineer is responsible to assess such measures and propose immediate rectification where safety is compromised.
<b>Target Performance</b>	Target Performance Measures, developed by Ashghal and Baladiya and approved by MME, are vital in shaping investment strategies and in setting Incident response expectations for the communities of Qatar. These are to be developed.
<b>Controlled removal of accumulated rainwater</b>	Drainage Networks is responsible for draining areas where SGW Networks are available. Temporary diversions will be allowed into the nearest manhole of the SGW Network. For select intersections, over-pumping to the nearest parcel of open land may be permitted.
<b>Sewer Network over-pumping prohibited</b>	Any dewatering/over-pumping to the Sewer Network by any source is prohibited.
<b>Contractor role and responsibility</b>	Areas under DNO&M Contractor responsibility shall be managed by those Contractors with Ashghal DNO&M oversight. The relevant Ashghal Contract Manager is responsible for checking Contractor preparation/activities as per the Contract terms and the requirements of this Procedure before Rainy Season commencement.
<b>Recovery of deferred maintenance</b>	During Incident and Emergency the preventive Maintenance Schedule will stop. Once the Incident or Emergency duration has passed, Heads of Sections will be required to develop a recovery plan for those planned assets that were stopped from being maintained because of the situation.

## 7.2 Flooding Prevention Scheme and Flooding Mitigation Plans

Over the last few years, Rainy Season preparedness and response roles have matured across DNO&M Sections. From late 2016, Ashghal committed to deliver the Flooding Prevention Scheme (FPS) Programme, putting in place flooding mitigations across priority Hotspots identified from historic Rainy Season events. The DNO&M Drainage Networks Section is leading FPS implementation on behalf of Assets Affairs, working closely with Ashghal Infrastructure Affairs. These new drainage solutions will be active during the 2018-19 Rainy Season and should alleviate accumulation of rainwater at these Hotspots during light to moderate rainfall events.

Additionally, the DNO&M Framework contracts are providing a vehicle for DNO&M to access significant Contractor resources to address other Hotspots not yet covered by the FPS Programme. The DNO&M Drainage Networks Section has secured Framework Contractors to support an Area-based approach to Rainy Season event response and recovery. Qatar has been divided into three areas – North, West and South – each being serviced by a Framework Contractor. Each Area has been split into a number of Zones (up to six), and the Area Contractor is working with the DNO&M Drainage Networks Section to create a Flooding Mitigation Plan (FMP) for each Zone (refer Appendix C for Zone map and list of FMPs).

The FPS Hotspot solutions, along with the Contractor resources distributed under the FMPs, provides Ashghal with significantly more capacity to address accumulation of rainwater at known Hotspots, and adopting an Area-based approach will improve response times. It also creates a more clear primary response focus for relevant DNO&M Sections, as illustrated in Figure 7.1 below.

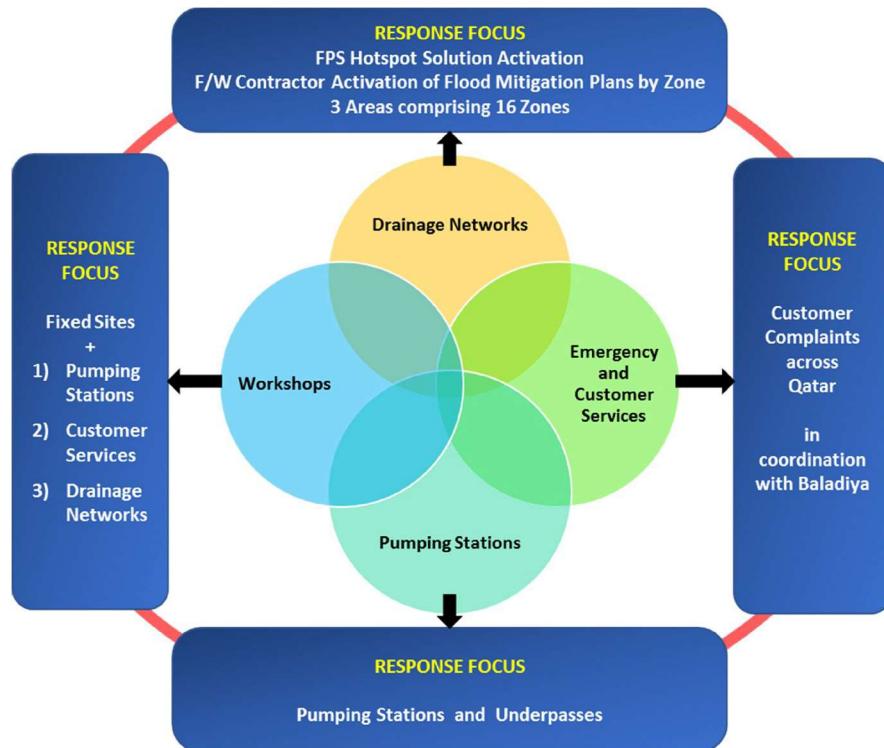


Figure 7.1  
Response Focus for relevant DNO&M Sections

### 7.3 Ashghal DNO&M Drainage Networks Section Response

Specific actions required by the DNO&M Drainage Networks Section under this Work Procedure are outlined in the table below.

Rainy Season Alarm Level	Section Actions <i>(all actions to be performed up to and including those specified by the Alarm Level)</i>
<b>Business As Usual</b>	<p><b>Surface Groundwater (SGW) Unit</b></p> <p><b>ENSURE NETWORK READINESS</b></p> <ul style="list-style-type: none"> <li>• Perform cleaning of the <b>Surface Water System</b> in priority order before the Rainy Season. Include in priority order as follows:                     <ul style="list-style-type: none"> <li>▪ PRIORITY 1 – Underpasses and Highways (under PWA)</li> <li>▪ PRIORITY 2 – Main Roads</li> <li>▪ PRIORITY 3 – Residential Areas</li> </ul> </li> <li>• Priority 1 gullies are to be re-cleaned after any rainfall based on Area Engineer inspection and/or instruction.</li> <li>• Maintain a random visual inspection program for SGW assets across Qatar to support ongoing planned maintenance tasks and feed in additional requests.</li> <li>• Receive and act upon requests from the Emergency and Customer Services and team where network issues require civil engineering intervention.</li> <li>• Support updating of the Register of Underpasses, and activities relating to handover of new Underpasses to DNO&amp;M.</li> <li>• Monitor Operations of SGW assets at all times for critical conditions and take actions in accordance with the Networks Contingency Plan.</li> <li>• Where contractors are engaged to resolve hotspots ensure that Flooding Mitigation Plans (FMPs) are in place for any events prior to completion and handover of these locations.</li> <li>• Provide information regarding optimal locations for discharge of over-pumping and other advice related to network condition and performance.</li> <li>• Perform assigned activities in the FMPs as Area Manager, Zone Coordinator, Engineer or Inspector Roles:                     <ul style="list-style-type: none"> <li><b>AREA MANAGER</b> <ul style="list-style-type: none"> <li>○ Meet regularly with Zone Coordinator and Contractor</li> <li>○ Support improvement of Area management. Share lessons learned from previous events with other Area Managers.</li> <li>○ Review Flood Mitigation Plans with Contractor and Zone Coordinators</li> </ul> </li> <li><b>ZONE COORDINATOR</b> <ul style="list-style-type: none"> <li>○ Meet regularly with Area Manager and Contractor</li> <li>○ Support improvement of FMP for Zone, including performance feedback</li> <li>○ Review Flood Mitigation Plan with Contractor, Area Manager and Engineers/Inspectors and become familiar with Zone and Hotspots</li> </ul> </li> <li><b>ENGINEERS/INSPECTORS</b> <ul style="list-style-type: none"> <li>○ Meet regularly with Zone Coordinator</li> <li>○ Support improvement of FMP for Zone and provide feedback on Contractor performance</li> <li>○ Support Zone Coordinators review of Flood Mitigation Plan</li> <li>○ Become familiar with Zone and Hotspots</li> </ul> </li> </ul> </li> </ul>

Business As Usual	<b>Foul Sewer Unit</b> <b>ENSURE NETWORK READINESS</b> <ul style="list-style-type: none"> <li>• Provide information regarding optimal locations for discharge of Surface Water to Foul Sewer and other advice related to network condition and performance.</li> <li>• Perform assigned activities in the FMPs as Zone Coordinator, Engineer or Inspector Roles</li> </ul>
Alert	<b>Surface Groundwater Unit</b> <ul style="list-style-type: none"> <li>□ Activate FMPs for contractors undertaking Hotspot solution projects</li> <li>□ Undertake inspections of assets as requested to verify operational status</li> <li>□ Mobilise cleaning crews to standby for inspection and cleaning of priority assets during Incidents</li> <li>□ Mobilize upon activation of FMPs as Area Manager, Zone Coordinator, Engineer or Inspector Roles:                     <ul style="list-style-type: none"> <li><b>AREA MANAGER</b> <ul style="list-style-type: none"> <li>○ Liaise with Incident Manager to confirm required level of mobilisation</li> <li>○ Confirm Zone Coordinator availability</li> <li>○ Confirm Contractor support in place for Zones through Zone Coordinators</li> <li>○ Ensure implementation of Contractor FMPs for each Zone within Area</li> <li>○ Prepare to mobilise to ECC</li> </ul> </li> <li><b>ZONE COORDINATOR</b> <ul style="list-style-type: none"> <li>○ Liaise with Area Manager to confirm required mobilization</li> <li>○ Confirm Engineer/Inspector availability</li> <li>○ Ensure implementation of Contractor FMP on site to the required level</li> <li>○ Report regularly to Area Manager on readiness</li> </ul> </li> <li><b>ENGINEERS/INSPECTORS</b> <ul style="list-style-type: none"> <li>○ Liaise with Zone Coordinator and mobilise as instructed</li> <li>○ Verify implementation of Contractor FMP on site to the required level</li> <li>○ Ensure pumps are tested and tankers are ready at required locations</li> <li>○ Review installation of mitigations as per Zone FMP</li> </ul> </li> </ul> </li> <li>□ Mobilize upon activation of FMPs as Zone Coordinator, Engineer or Inspector Roles:                     <ul style="list-style-type: none"> <li><b>ZONE COORDINATOR</b> <ul style="list-style-type: none"> <li>○ Liaise with Area Manager to confirm required mobilization</li> <li>○ Confirm Engineer/Inspector availability</li> <li>○ Ensure implementation of Contractor FMP on site to the required level</li> <li>○ Report regularly to Area Manager on readiness</li> </ul> </li> <li><b>ENGINEERS/INSPECTORS</b> <ul style="list-style-type: none"> <li>○ Liaise with Zone Coordinator and mobilise as instructed</li> <li>○ Verify implementation of Contractor FMP on site to the required level</li> <li>○ Ensure pumps are tested and tankers are ready at required locations</li> <li>○ Review installation of mitigations as per Zone FMP</li> </ul> </li> </ul> </li> </ul>

<b>Incident</b>	<p><b>Surface Groundwater Unit</b></p> <ul style="list-style-type: none"><li>Monitor water levels in Surface Water Lagoons and provide feedback on any abnormalities. Such abnormalities are to be discussed immediately with concerned Section as well as MDOM.</li><li>Monitor water levels at Emergency Flooding Areas or storage systems and take necessary dewatering actions to prevent overflows and maintain systems operational.</li><li>Support the operation of the SGW Network assets (Pumping Stations, dewatering activities, lagoon operations, Valve/Penstock operation).</li><li>Attend to inspection and cleaning of priority assets during Incidents as requested.</li><li>Perform on site assigned activities in the FMPs as Area Manager, Zone Coordinator, Engineer or Inspector Roles:</li></ul> <p><b>AREA MANAGER</b></p> <ul style="list-style-type: none"><li>Attend ECC on Incident and act as focal point for Area status</li><li>Act as point of liaison within ECC for Zone Coordinators within Area, sharing new ECC requests</li><li>Provide status updates to ECC on Incident impact across each Zone within Area</li><li>Communicate ECC directives to Zone Coordinators relating to response and recovery</li></ul> <p><b>ZONE COORDINATOR</b></p> <ul style="list-style-type: none"><li>Coordinate activities of Engineers and Inspectors on site within the Zone</li><li>Liaise with Engineers/Inspectors to ensure Contractor activates mitigations on rainfall and accumulated rainwater</li><li>Prioritise Zone response and recovery</li><li>Routinely report to Area Manager on performance of Zone mitigations, interventions and adaptations</li><li>Take action on new ECC requests from Area Manager</li><li>Secure additional required resources and equipment</li><li>Report on closure of Hotspots</li></ul> <p><b>ENGINEERS/INSPECTORS</b></p> <ul style="list-style-type: none"><li>Patrol Zone ahead of and during rainfall, photograph and report issues to Zone Coordinator</li><li>Support Contractor on site to activate Hotspot mitigations on rainfall and/or accumulated rainwater, in line with Zone Coordinator instructions</li><li>Advise Zone Coordinator of required interventions or improvements, and on resource/equipment needs</li><li>Maintain records of Contractor activities to support verification of Contractor invoicing</li></ul> <p><b>Foul Sewer Unit</b></p> <ul style="list-style-type: none"><li>Perform on site assigned activities in the FMP Plans as Zone Coordinator, Engineer or Inspector Roles:</li></ul> <p><b>ZONE COORDINATOR</b></p> <ul style="list-style-type: none"><li>Coordinate activities of Engineers and Inspectors on site within the Zone</li><li>Liaise with Engineers/Inspectors to ensure Contractor activates mitigations on rainfall and accumulated rainwater</li><li>Prioritise Zone response and recovery</li></ul>
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<b>Incident</b>	<ul style="list-style-type: none"><li>○ Routinely report to Area Manager on performance of Zone mitigations, interventions and adaptations</li><li>○ Take action on new ECC requests from Area Manager</li><li>○ Secure additional required resources and equipment</li><li>○ Report on closure of Hotspots</li></ul> <p><b>ENGINEERS/INSPECTORS</b></p> <ul style="list-style-type: none"><li>○ Patrol Zone ahead of and during rainfall, photograph and report issues to Zone Coordinator</li><li>○ Support Contractor on site to activate Hotspot mitigations on rainfall and/or accumulated rainwater, in line with Zone Coordinator instructions</li><li>○ Advise Zone Coordinator of required interventions or improvements, and on resource/equipment needs</li><li>○ Maintain records of Contractor activities to support verification of Contractor invoicing</li></ul>
<b>Emergency</b>	<p><b>Surface Groundwater Unit / Foul Sewer Unit</b></p> <p>Drainage Networks HoS becomes a member of the Key Assessment Team providing input around response actions to contain and recover from the Emergency.</p>

## 7.4 Ashghal Flooding Prevention Scheme (FPS) Programme

Specific actions required by the Ashghal Flooding Prevention Scheme Programme team under this Work Procedure are outlined in the table below.

Rainy Season Alarm Level	<b>Actions</b> <i>(all actions to be performed up to and including those specified by the Alarm Level)</i>
<b>Business As Usual</b>	<p><b>HOTSPOT FLOODING PREVENTION SCHEME (FPS) PROGRAMME CONTRACTORS</b></p> <ul style="list-style-type: none"> <li>Ensure approved Flood Mitigation Plans (FMPs) are in place for all active contracts so that construction Contractors put in place appropriate means to rapidly remove accumulated rainwater at incomplete Hotspot locations and monitor performance of assets at completed locations.</li> </ul> <p><b>HOTSPOT FLOODING MITIGATION PLANS (FMPs)</b></p> <ul style="list-style-type: none"> <li>Define and communicate the boundaries of the Zone Flooding Mitigation Plans (FMPs) and the residual existing Hotspots under Ashghal management within each Zone</li> <li>Work with Surface and Groundwater SIC Framework Work Orders appointed for each Area to develop and review Zone FMPs for the residual existing Hotspots under Ashghal management.</li> <li>Maintain a register of Ashghal Area Managers and Zone Coordinators and other volunteers by Area. Ensure coordination of planned absences to ensure minimum coverage for each Plan.</li> <li>Maintain and assure readiness of WebMaps and SharePoint registers to allow for operation of the ECC status maps</li> <li>Pre-position pumps and stationary equipment as per FMP requirements before the Rainy Season</li> <li>Coordinate with Infrastructure Affairs Projects Departments and PMCs (Expressways, Local Roads and Drainage) to receive, review and upload the FMPs prepared by the concerned Project Teams.</li> </ul>
<b>Alert</b>	<ul style="list-style-type: none"> <li>Activate FPS construction Contractor FMPs.</li> <li>Mobilise Zone FMP resources/equipment (via SIC Framework Contractors), ready for activation on first sign of rainwater accumulation. It is acknowledged that <b>mobilisation may be progressive</b> under direction of DNO&amp;M Management, to more critical Hotspots first and depending on severity of forecast rainfall and cost implications.</li> <li>Communicate with Infrastructure Affairs Projects Departments and PMCs (Expressways, Local Roads and Drainage) nominated key personnel and feedback on FMP activation</li> </ul>
<b>Incident</b>	<ul style="list-style-type: none"> <li>Activate FPS and FMP Zone Hotspot solutions to remove rainwater accumulation and re-activate as required.</li> <li>Feedback Hotspot activation information to the ECC via the Area Managers.</li> <li>Ensure good record keeping of Contractor activity</li> <li>Support efforts of Emergency and Customer Services to address Customer Complaints, provided that support does not impact Hotspot management</li> <li>Monitor water levels at Emergency Flooding Areas or constructed storage systems and take necessary dewatering actions to prevent overflows and maintain systems operational.</li> <li>Feedback flood recovery operations reported by IA/PMC Projects to the ECC via the Area Managers.</li> </ul>
<b>Emergency</b>	Support Emergency response efforts in line with FMPs and ECC Emergency Manager directives

## 7.5 Ashghal DNO&M Emergency and Customer Services Section Response

Specific actions required by the DNO&M Emergency and Customer Services team under this Work Procedure are outlined in the table below.

Rainy Season Alarm Level	<b>Actions</b> <i>(all actions to be performed up to and including those specified by the Alarm Level)</i>
<b>Business As Usual</b>	<ul style="list-style-type: none"> <li>Receive flooding complaints from Ashghal Contact Centre and assign each complaint as a service request to in-house or contractor resource for response</li> <li>Instruct appropriate resource to attend site and undertake actions to resolve blockages and related flooding issues. Site attended by Customer Service Engineer and Inspector with Contractor or in-house team, with tankers and/or pumps as required. Updates issued to Emergency and Customer Service Head of Section and then to MDOM.</li> <li>Where issue unable to be resolved, assign issue to the Drainage Networks Section for civil engineering intervention and Workshop Section for provision of pumps and equipment if necessary.</li> <li>Manage the register of Dewatering Contractors, including up-to-date information on Contractor contact details, discharge volumes and locations, and available equipment.</li> <li>Email Dewatering Contractors on a weekly basis during the Rainy Season to ensure they have their contingency plans ready to activate</li> <li>Ensure readiness of the ECC in coordination with other Sections</li> <li>Ensure availability of suction tankers and resources for Rainy Season E&amp;CS response, including provision of a fleet of 50 tankers to resolve non-Hotspot related rainwater accumulation locations</li> <li>Liaise with Baladiya representatives to build a good working relationship ahead of events</li> </ul>
<b>Alert</b>	<ul style="list-style-type: none"> <li>Review Incident readiness and check equipment/resource availability. Consider increasing resource availability by diverting resources away from Business As Usual activities.</li> <li>Mobilise tankers to Zones / Areas as per agreed operational response plan</li> <li>Contact Dewatering Contractors informing about upcoming rain and requesting they reduce flows (subject to instructions from Ashghal management)</li> </ul>
<b>Incident</b>	<ul style="list-style-type: none"> <li>Initiate three 8-hour shift rotations with Emergency and Customer Service staff</li> <li>Contact Dewatering Contractors requesting they reduce flows in rain impacted areas</li> <li>Support the Incident Manager by verifying ECC complaints locations (non-Hotspot locations)</li> <li>Following Incident Manager allocation of complaint locations, and coordination with Baladiya, deploy tankers to new rainwater accumulation locations (non-Hotspot locations) to assist with removal of rainwater and recovery of service</li> <li>Contact Contractors regarding availability of additional suction tankers if required</li> <li>Communicate with Incident Manager and MDOM regarding response requirements</li> <li>Communicate with Police regarding traffic management or diversion requirements</li> <li>Liaise with Roads Maintenance Traffic, coordinate with Municipalities regarding tankers and priority sites for attention</li> <li>Complete Customer Service Incident Report post event</li> </ul>
<b>Emergency</b>	<ul style="list-style-type: none"> <li>Head of Emergency and Customer Services becomes a member of the Key Assessment Team providing input around prioritizing customer response and liaising with stakeholders</li> <li>Post rainfall, respond to business as usual customer complaints as part of the recovery process</li> </ul>

## 7.6 Ashghal DNO&M Workshops Section Response

Specific actions required by the DNO&M Workshops Section under this Work Procedure are outlined in the table below.

Rainy Season Alarm Level	Section Actions <i>(all actions to be performed up to and including those specified by the Alarm Level)</i>
<b>Business As Usual</b>	<ul style="list-style-type: none"> <li>Coordinate with all Municipalities to distribute flood mitigation equipment.</li> <li>Review and update Rainy Season pump distribution using the Workshops e-systems ahead of each Rainy Season (number of pumps and types, gensets and locations).</li> <li>Provide and maintain sufficient Diesel Pumps and Mobile Generators before the Rainy Season in good condition and workable order.</li> <li>Arrange for auxiliary pump equipment (hoses, couplings, etc) along with fuel &amp; oil supplies.</li> <li>Ensure mobile pumps have been loaded onto Fast Response Units.</li> <li>Make sure all site pumps are fueled and ready for operation.</li> </ul>
<b>Alert</b>	<ul style="list-style-type: none"> <li>Groups A through G and Workshops team members attend the main Workshops building for briefing on their designated areas of responsibility and after the briefing all group members disperse immediately to assigned areas to undertake roaming patrols and to check pumps at designated locations.</li> <li>Mobilise Fast Response Units to designated waiting areas and stay on high alert awaiting instructions from the Shift Leader or Workshop Engineer.</li> </ul>
<b>Incident</b>	<ul style="list-style-type: none"> <li>Groups A through G continue checking designated sites and areas of responsibility.</li> <li>On heavy rain, activate pumps at impacted sites.</li> <li>Maintain direct contact with the Shift Leader and the Workshop Engineer in the ECC to prioritise sites to be attended during Incident.</li> <li>Based on ECC instructions, mobilise Fast Response Units to remove rainwater in areas nearby standby locations.</li> <li>Provide regular progress updates on pumps checked and pumps activated to the PS Duty Engineer and the Workshop Engineer in the ECC.</li> <li>If traffic management or any additional resources are required, contact the Shift Leader to arrange required support, liaising with the Workshop Engineer in the ECC.</li> <li>Following an actual rainfall event, once all duties are fulfilled, Workshops will support Municipalities through provision of temporary pumps. These are to be arranged through the Municipality and Workshop representatives in the ECC.</li> </ul>
<b>Emergency</b>	<ul style="list-style-type: none"> <li>Groups A through G are dispersed immediately to attend any new emergency flood job requests as directed by the Shift Leader or the Workshop Engineer, based on ECC instructions.</li> <li>Workshops HoS becomes a member of the Key Assessment Team providing input around response actions to contain and recover from the Emergency, playing a key role around provision of resources and materials.</li> <li>All Workshop staff to attend to Workshop and support response efforts as directed by the Emergency Manager. STW and PS staff may support Workshop activities on request of additional resources, including pump operation.</li> </ul>

## 7.7 Ashghal DNO&M Pumping Stations Section Response

Specific actions required by the DNO&M Pumping Stations Section under this Work Procedure are outlined in the table below.

Rainy Season Alarm Level	Section Actions <i>(all actions to be performed up to and including those specified by the Alarm Level)</i>
<b>Business As Usual</b>	<ul style="list-style-type: none"> <li>SCADA Team monitors weather forecast and maintains SMS communications system. PS HoS receives the Roads Maintenance weather report for information and circulates to PS Engineers.</li> <li>Before the Rainy Season, check all Foul Water and SGW Pumping Stations pumps and generators are in safe operational condition. For SGW Pumping Stations, sediment must be removed from receiving tanks and chambers.</li> <li>For Pump Stations under maintenance, over-pumping is to be carried out to the nearest suitable SGW manhole or the nearest available parcel of open land, but no further than 500m from the point of concern.</li> <li>PS HoS shall check availability and communicate spares requirements for pumps, generators and other equipment in coordination with the WorkshopsSection.</li> <li>Support the Projects Department as they supervise Pump Stations with temporary bypass pumps in place that are operated by Contractors. Obtain Contractor contact details from Projects Department and distribute to SCADA Team andEngineers.</li> <li>Monitor Pump Stations at all times for critical conditions such as power failure, High Level Alarm, fire alarm and pump failure. Should any of these conditions arise, act in accordance with the Pump Stations Contingency Plan.</li> <li>Ensure all attenuation tanks, storm water holding tanks and Emergency Flood Areas are either at a low level or empty in readiness for rain.</li> </ul>
<b>Alert</b>	<ul style="list-style-type: none"> <li>SCADA Team monitors weather forecast and notifies "Alert" in accordance with this Procedure when more than 33% chance of rain or Qweather radar displays minimum "yellow" (<math>\geq</math> dBz 28.0) rainfall intensity (<math>\geq</math> 2mm/hour) near communities or significant infrastructure.</li> <li>PS Area Engineers check, when visiting stations as part of normal duties, station pumps and generators and keep in a state of readiness.</li> <li>PS Engineers and teams continue with Pump Station maintenance and inform PS HoS of Pump Stations where full capacity is not available.</li> <li>PS teams collect car keys from SCADA Room if Alarm is after working hours.</li> <li>Assist with ECC readiness</li> </ul>

<b>Incident</b>	<ul style="list-style-type: none"> <li>SCADA Team monitors weather forecast and notifies “Incident” on MDOM confirmation in accordance with this Procedure when forecast heavy rain or more than 10mm rain in 24 hours. SCADA Team provides regular updates on actual rainfall locations and amounts (mm).</li> <li>PS HoS and Engineers suspend all routine Pump Station maintenance activities.</li> <li>Initiate two 12-hour shift rotations with Pump Stations staff.</li> <li><b>Inspect all Underpasses</b> - deploy teams to inspect 20 routes as detailed in Appendix C (Ashghal and Framework Contractors).</li> <li><b>Inspect Pump Stations</b> in the following priority order:           <ol style="list-style-type: none"> <li><b>Priority 1 Pump Stations</b> PS-32A, PS-N25, PS-34, PS-23 and SW1 (Stations to be manned on 24 hour roster)</li> <li><b>Priority 2 Pump Stations</b> PS1, 12, 13, 13/2, 15, 17, 25/5, 25/2A, 27, 30, 37, 40, 44, W1, SW2, SW2A and SW3.</li> <li><b>Discharge chambers</b> for PS 3N, 15, 16, 17 and W1 (these chambers shall be monitored by Network Area Engineer in coordination with PS Section and SCADA Team).</li> </ol> </li> <li>If STWs are overloaded by rainfall infiltration, control the forwarding flows to STWs in accordance with the discharge flow management protocol outlined in the table below:</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Forwarding to</th><th style="text-align: center;">Main controlled by</th><th style="text-align: center;">Backup controlled by</th></tr> </thead> <tbody> <tr> <td style="text-align: center; vertical-align: top;">DS STW Plant</td><td style="text-align: center;">PS - 40</td><td style="text-align: center;">PS - 3N, 16, 17 and W1</td></tr> <tr> <td></td><td style="text-align: center;">PS - 30</td><td style="text-align: center;">1, 5, 6, 10, 11</td></tr> <tr> <td></td><td style="text-align: center;">PS - 44</td><td style="text-align: center;">PS - 28 and 44A</td></tr> <tr> <td style="text-align: center; vertical-align: top;">DW STW Plant</td><td style="text-align: center;">PS - 32A</td><td style="text-align: center;">PS - 13, 34, N25, 26</td></tr> <tr> <td></td><td style="text-align: center;">PS - 50</td><td style="text-align: center;">PS - 52, 53, 54</td></tr> <tr> <td style="text-align: center; vertical-align: top;">DN STW Plant</td><td style="text-align: center;">PS - 70</td><td style="text-align: center;">PS - N25, 27, N25A</td></tr> </tbody> </table> <ul style="list-style-type: none"> <li>On request by Workshop HoS during heavy rain, the PS HoS shall provide Pumping Station staff as required to work under the supervision of Workshop Engineers for emergency over-pumping in accordance with the Workshops e-systems which illustrate agreed pump locations/operators. Pumping Station staff will need to maintain operational condition of Pumping Stations.</li> <li>In the case of major failure of a Pump Station during rain refer to the PS Contingency Plan and coordinate response with Workshops for over-pumping.</li> <li>After a heavy rain event, a special program to clean wet wells (outside of routine program maintenance) shall be carried out immediately by Pumping Station Framework Contractors to cover affected Pumping Stations.</li> </ul>	Forwarding to	Main controlled by	Backup controlled by	DS STW Plant	PS - 40	PS - 3N, 16, 17 and W1		PS - 30	1, 5, 6, 10, 11		PS - 44	PS - 28 and 44A	DW STW Plant	PS - 32A	PS - 13, 34, N25, 26		PS - 50	PS - 52, 53, 54	DN STW Plant	PS - 70	PS - N25, 27, N25A
Forwarding to	Main controlled by	Backup controlled by																				
DS STW Plant	PS - 40	PS - 3N, 16, 17 and W1																				
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	PS - 50	PS - 52, 53, 54																				
DN STW Plant	PS - 70	PS - N25, 27, N25A																				
<b>Emergency</b>	<ul style="list-style-type: none"> <li>SCADA Team monitors rainfall and notifies “Emergency” on MDOM confirmation in accordance with this Procedure when heavy rain flooding creates potential or actual loss of Ashghal asset service or damage to Ashghal reputation. SCADA Team provides regular updates on actual rainfall locations and amounts (mm).</li> <li>SCADA Team set up ECC SCADA display.</li> <li>Pump Stations HoS becomes a member of the Key Assessment Team providing input around response actions to contain and recover from the Emergency.</li> <li>Pump Station Area Engineers maintain operation of critical Pump Stations at all times. Feeding stations may be temporarily shut down to prevent flooding.</li> <li>Continue Underpass and priority Pump Station inspections.</li> </ul>																					

## 7.8 Ashghal DNO&M Treatment Section Response

Specific actions required by the DNO&M Sewage Treatment Works Section under this Work Procedure are outlined in the table below.

Rainy Season Alarm Level	Section Actions <i>(all actions to be performed up to and including those specified by the Alarm Level)</i>
<b>Business As Usual</b>	<ul style="list-style-type: none"> <li>Manage the operation of STWs and PTPs within operational limits.</li> <li>Understand at all times the available storage capacity of STW lagoons and share this information with Heads of Sections.</li> <li>Manage the distribution of TSE so there is no accumulation of TSE in the system.</li> <li>Participate in internal STW daily team meeting including discussion of weather conditions.</li> </ul>
<b>Alert</b>	<ul style="list-style-type: none"> <li>Facilitate a meeting between STW and Drainage Network Section Valve Group to make sure all TWN valves operable.</li> <li>Ensure all STW lagoons and storm holding or balancing tanks are empty.</li> </ul>
<b>Incident</b>	<ul style="list-style-type: none"> <li>Pumping Stations within rain areas should clear wet wells in preparation of rainfall infiltration – this is likely to create higher flows to STWs.</li> <li>Receive extra flows at any STWs or PTPs and control as per dedicated “STW/PTP Wet Weather Procedure” (procedure to be executed by STW Contract Management Team Manager who will report to STW HoS on progress).</li> </ul> <p><b>Doha South and Industrial Area STW Plants</b></p> <ul style="list-style-type: none"> <li>A copy of the wet weather procedure for each of the above facilities is held in the Rainy Season Manual in the ECC Room.</li> <li>Special attention is to be paid to prevent the flooding of Substations within the plant.</li> </ul> <p><b>Doha West STW Plant, Doha North STW Plant, Lusail STW Plant, Barwa City PTP and other PTPs, and Al Khor STW Plant</b></p> <ul style="list-style-type: none"> <li>A copy of the wet weather procedure for each of the above facilities is held in the Rainy Season Manual in the ECC Room.</li> </ul>
<b>Emergency</b>	<ul style="list-style-type: none"> <li>Support emergency response actions as required by the Key Assessment Team and the Emergency Manager.</li> <li>On threat of losing the process at STWs, HoS should instruct the CMT Managers to exercise the option of diverting flow from DS &amp; DW STWs to Abu Nakhla lagoon or from DN STW to the Internal Lagoon.</li> <li>TWN and PS Sections to be contacted to check the possibility of diverting TSE through the TSE network or SGW Networks to the sea.</li> <li>On flooding at STW sites, STW staff are to operate installed diesel pumps. Monitor execution by Contractors of their required emergency response arrangements at Doha South and Industrial Area STWs, and Doha West STW.</li> </ul>

## 7.9 Ashghal DNO&M Treated Water Networks Section Response

Specific actions required by the DNO&M Treated Water Networks (TWN) Section under this Work Procedure are outlined in the table below.

Rainy Season Alarm Level	Section Actions <i>(all actions to be performed up to and including those specified by the Alarm Level)</i>
<b>Business As Usual</b>	<ul style="list-style-type: none"> <li>Operate the TWN assets.</li> <li>Respond to any contingency that may arise involving the TWN assets.</li> <li>Communicate potential major flooding that could arise from exercising critical washout valve.</li> <li>Monitor TWN assets at all times for critical conditions act in accordance with the TSE Assets Contingency Plan.</li> </ul>
<b>Alert</b>	<ul style="list-style-type: none"> <li>Review network demand for TSE in case of rain, based on forecast information</li> </ul>
<b>Incident</b>	<ul style="list-style-type: none"> <li>Check location and amount of rainfall.</li> <li>Assess the impact of stopping irrigation activities by TSE customers on commencement of rain.</li> <li>Manage extra TSE flow during heavy rain by opening TWN washout valves where connected to SGW Network manhole.</li> <li>Open Washout Valves at VC-159W, VC-84W, VC-57W and VC-26W after getting approval from the TWN Section Head. Note that:                             <ol style="list-style-type: none"> <li>159W, 84W and 57W (all located in Greater Doha, discharge to the sea thru SWG Networks.</li> <li>26W (located in Al Khor) discharges directly to the sea.</li> </ol> </li> <li>Maintain close communication with operation groups at Doha South STW, Doha West STW, Doha North STW, Industrial Area STW and Al Khor STW to manage TSE distribution.</li> </ul>
<b>Emergency</b>	<ul style="list-style-type: none"> <li>Support emergency response actions as required by the Key Assessment Team and the Emergency Manager.</li> <li>Open Washout Valve at VC-819W after getting approval from the PS Section Head. Note that:                             <ol style="list-style-type: none"> <li>819W discharges directly to SW5 PS.</li> </ol> </li> <li>In accordance with the Ministry of Municipality and Environment permit requirements, close Washout Valves at VC-159W, VC-84W, VC-57W and VC-26W within 72 hours of rain stopping.</li> <li>Close Washout Valve at VC-819W after stoppage of rain or earlier upon instruction from the PS Section Head.</li> </ul>

## 7.10 Baladiya Regions Response

Specific actions identified by Baladiya for the Baladiya Regions are outlined in the table below, aligned to the Ashghal escalation Alarm Levels.

Rainy Season Alarm Level	Section Actions <i>(all actions to be performed up to and including those specified by the Alarm Level)</i>
<b>Business As Usual</b>	<ul style="list-style-type: none"> <li>Provide suction tanker services and maintain suction tankers.</li> <li>Perform road/street cleaning before the rainy season. Include all intersections / interchanges and underpasses.</li> <li>Receive and act upon requests from the Baladiya Customer Contact Centre</li> <li>Ensure the readiness of the manpower and machinery, pumps, emergency supplies</li> <li>Empty suction tankers at the end of working hours, and refuel for readiness</li> <li>Assess flood mitigation options for Hotspots that are allocated to Baladiya and familiarise response teams with the assessed response requirements</li> </ul>
<b>Alert</b>	<ul style="list-style-type: none"> <li>Mobilise tankers and pumps to Baladiya Hotspot locations as per the assessed response requirements and place on standby.</li> <li>All other tankers, pumps and equipment are to be on standby for customer complaints ready for mobilisation.</li> <li>Monitor weather situation.</li> </ul>
<b>Incident</b>	<ul style="list-style-type: none"> <li>Services Affairs Managers to attend to each Baladiya Municipality Emergency Room; Baladiya Representative(s) locates to the Ashghal ECC and liaises with Ashghal Incident Manager on mutual aid and support.</li> <li>Implement response requirements for Baladiya Hotspot locations on accumulation of rainwater</li> <li>Release tankers to flooded sites as required to support Ashghal ECC and Baladiya Customer Contact Centre complaints.</li> <li>On heavy rain, activate pumps at impacted sites.</li> <li>Provide information regarding optimal locations for discharge of over-pumping and share this information with Ashghal ECC.</li> </ul>
<b>Emergency</b>	<ul style="list-style-type: none"> <li>Services Affairs Managers, working with MED Manager, to assess the Emergency situation, develop solutions and implement actions aligned with Ashghal Emergency Manager.</li> </ul>

## 7.11 Baladiya MED Section Response

Specific actions identified by Baladiya for the Baladiya MED Section are outlined in the table below, aligned to the Ashghal escalation Alarm Levels.

Rainy Season Alarm Level	<b>Actions</b> <i>(all actions to be performed up to and including those specified by the Alarm Level)</i>
<b>Business As Usual</b>	<ul style="list-style-type: none"><li>Provide routine maintenance services to all Ministry pumps and equipment.</li><li>Provide repair services to all Ministry pumps and equipment.</li><li>Coordinate with Municipalities in terms of their needs regarding equipment and vehicles.</li></ul>
<b>Alert</b>	<ul style="list-style-type: none"><li>MED staff to stay on standby.</li><li>Check on teams standing by and response readiness in case of escalation to Incident.</li></ul>
<b>Incident</b>	<ul style="list-style-type: none"><li>Repair water tankers and pumps in case of damage or deactivation during rain.</li><li>Support Municipalities by providing additional equipment or vehicles as required.</li><li>Provide field support to Municipalities by making MED teams available as required.</li><li>Provide regular progress reports and share with Ashghal.</li></ul>
<b>Emergency</b>	<ul style="list-style-type: none"><li>Head of Maintenance Section, working with Services Affairs Managers, to assess the Emergency situation, develop solutions and implement actions.</li></ul>

## 7.12 Roads Maintenance Response

Specific actions required by Roads Maintenance Department under this Work Procedure are outlined in the table below.

Rainy Season Alarm Level	Section Actions <i>(all actions to be performed up to and including those specified by the Alarm Level)</i>
<b>Business As Usual</b>	<ul style="list-style-type: none"> <li>Monitor weather reports on daily basis (Roads Duty Manager).</li> <li>Follow normal RMD work processes and manage/respond to routine problems to resolve.</li> <li>Roads Duty Managers and Roads Duty Engineers to be on call outside of normal working hours as identified on the Roads Emergency Standby Schedule (RESS)</li> <li>Roads Framework Contractors to respond within designated Zones where these are in place (mobilisation / roll out will continue until Q1 2019)</li> <li>Manage complaints and defects within existing RMD processes</li> </ul>
<b>Alert</b>	<ul style="list-style-type: none"> <li>Monitor weather.</li> <li>Place Framework Contractors, RMD response crews and other contractors on standby.</li> <li>Be available for phone communication at all times and liaise with Nominated DNO&amp;M Incident Manager in readiness for escalation to Incident.</li> </ul>
<b>Incident</b>	<p><b>Duty Manager and Senior Engineers – Roads Maintenance Department</b></p> <ul style="list-style-type: none"> <li>Duty Manager or designated RMC operator to attend ECC to provide support.</li> <li>Allocate resources to manage Incident, including manpower, plant and secondary response.</li> <li>Dispatch and direct Roads Duty Engineers and Framework Contractors.</li> <li>Monitor weather and support DNO&amp;M activities.</li> <li>Share updates and information with ECC and Roads staff and managers as required.</li> </ul> <p><b>Heads of Sections</b></p> <ul style="list-style-type: none"> <li>Actively seek and share Roads related information about the Incident.</li> <li>Analyze the situation and develop prioritized Roads actions to minimize impacts and resolve the issue.</li> <li>Clearly communicate recommended actions for Roads teams and specific individuals to the Roads Manager (MRM).</li> <li>Ensure required plant and equipment is available and mobilized.</li> <li>Assess need for site inspections by Roads Engineers or other Roads teams.</li> <li>Consider the Roads network-wide implications and assess potential secondary failure scenarios.</li> </ul>
<b>Emergency</b>	<p><b>Manager Roads Maintenance</b></p> <ul style="list-style-type: none"> <li>Becomes a member of the Key Assessment Team providing input around response actions to contain and recover from the Emergency.</li> </ul> <p><b>Roads Heads of Section</b></p> <ul style="list-style-type: none"> <li>Deputise for MRM where nominated to attend Emergency Coordination Centre (ECC)</li> </ul> <p><b>Duty Manager and Senior Engineers – Roads Maintenance Department</b></p> <ul style="list-style-type: none"> <li>Provide support to the DNO&amp;M Emergency Manager.</li> <li>Co-ordinates Roads resources where required.</li> </ul>

## 8 STAKEHOLDER COORDINATION

### 8.1 Ashghal and Baladiya Coordination

Ashghal have nine Support Teams identified who have knowledge of Ashghal assets within eight Baladiya Municipalities (plus MED). Each Support Team comprises several Ashghal staff (Drainage and Roads Engineers and Technical Staff). Under **Business As Usual** all members of each Support Team should meet periodically with their nominated Baladiya contacts to establish relationship and share information, including maintenance issues noted by Baladiya that may require Ashghal attention and investment. Such issues should be shared by the Support Team with the relevant Ashghal Assets Affairs Department, so that maintenance requirements can be addressed by Ashghal Assets Affairs Framework contractors and issues requiring investment can be assessed by the Assets Affairs Asset Management Team.

Ashghal should provide feedback to Baladiya on actions able to be taken to address their suggestions and concerns. Capture of Baladiya investment suggestions could also be captured through an annual workshop between Baladiya and Ashghal Assets Affairs Asset Management, held in January each year to align with the Ashghal investment planning cycle.

Under **Incident** and **Emergency** situations, the Ashghal ECC is activated and each Baladiya Services Affairs Manager will activate the Emergency Room for their Municipality. The Ashghal ECC should be attended by an Ashghal **Incident or Emergency** Manager, a Baladiya Representative and other Ashghal staff. Baladiya Public Relations will identify a roster of weekly Baladiya Representatives and share details with Ashghal.

Baladiya Representatives in the Ashghal ECC will act as the key liaison between Ashghal and Baladiya, receiving requests for support from Municipalities and sharing these requests with the Ashghal **Incident or Emergency** Manager. The Ashghal **Incident or Emergency** Manager will evaluate priority response actions, in line with this Procedure and tailored to the specific event, and direct support efforts to where they are most urgently required.

The Ashghal Support Team members for each Municipality will be mobilised at **Alert** to Zones to implement Flood Mitigation Plans targeting known Hotspots. They are unlikely to be available to provide support to their Baladiya counterparts from **Alert**, as they will be busy with flood mitigation duties. Therefore, requests from Baladiya for support during an **Incident or Emergency** should be directed to the Baladiya Representatives within the Ashghal ECC.

Figure 8.1 below illustrates the coordination between Ashghal and Baladiya during an **Incident or Emergency** situation.

## Incident and Emergency Coordination Arrangement

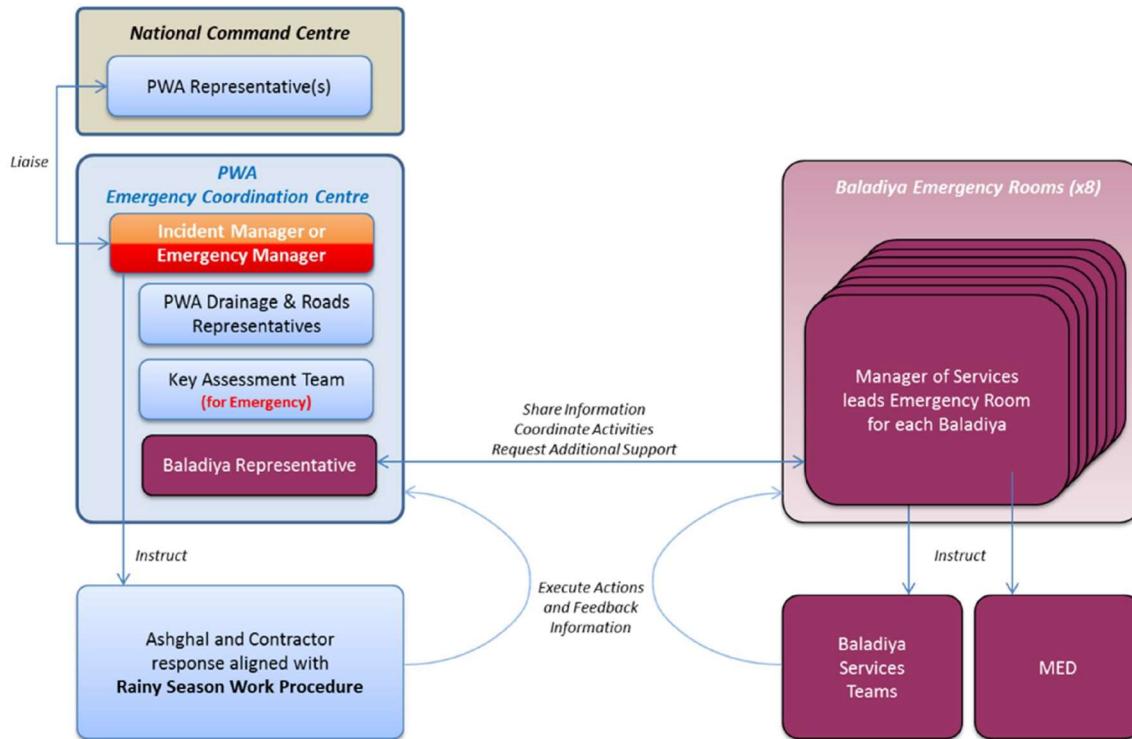


Figure 8.1  
Ashghal and Baladiya coordination during Incidents and Emergencies

An Incident could escalate to Emergency either by:

- Ashghal personnel in the field observing conditions that meet or exceed the Emergency definition (rainfall event flooding threatens loss of Ashghal asset service and/or damage to agency reputation(s))
- Baladiya Area Supervisors contacting their Services Affairs Manager regarding a situation of concern. In this instance, the Baladiya Services Affairs Manager would contact the Baladiya Representative(s) in the Ashghal ECC, who would discuss the request for escalation to Emergency with the Incident Manager, to be confirmed by MDOM.

### 8.2 Direction and Priority of Response

For clarity, the following general principles will apply regarding direction of resources and priority of Incident and Emergency response:

- Baladiya staff at all times remain under the direction of Baladiya Managers, who follow the direction of the Baladiya Services Affairs Manager (Emergency Manager) within each Municipality
- Ashghal staff at all times remain under the direction of Ashghal Managers, who follow the direction of the Ashghal Incident Manager or Ashghal Emergency Manager issuing direction from the ECC
- All staff should strive to adhere to the following prioritisation of response:
  - Protection of life
  - Protection of health and safety
  - Protection of assets

- Restoring service to priority drainage, road and other public assets under Ashghal or Baladiya control
- Protection of the environment
- Recovering to Business As Usual conditions as soon as possible
- When conflicting priorities arise between Ashghal and Baladiya response requirements, immediate discussion must be held between the Incident/Emergency Managers of Ashghal and Baladiya to agree priority of response, distribution of resources and equipment, to resolve all issues.

### 8.3 Ashghal Assets Affairs Internal Coordination

Roads Maintenance has an important part to play during Rainy Season response. As situations escalate from Business-As-Usual, to Alert, to Incident and then to Emergency the level of traffic disruption due to heavy rainfall is likely to worsen. During Incident, the coordination of actions between DNO&M and Roads Maintenance is important, hence the requirement for a member of the Frameworks Senior Engineer team from Roads Maintenance, to be located in the ECC to work with MDOM. In Emergency situations, a Roads Head of Section or MRM, would also ideally be located in the ECC.

Depending on the scale of the situation, Roads Maintenance may be called upon to implement the Workzone Traffic Management Guide – Section 3.6 Emergencies and Unplanned Works. Roads Maintenance have developed two additional documents that should be referred to before and during heavy rainfall events:

- Roads O&M Contingency Plan (AAR-OMPL-002)
- Roads Maintenance Department Severe Weather Plan (AAR-OMPL-025)

In particular, Section 6 of the Severe Weather Plan addresses “Heavy Rain”, and outlines event detection for Roads Maintenance where the road network is significantly adversely impacted, event verification, initial response to traffic hazards by the Roads Maintenance Emergency Team, and event recovery.

Roads Maintenance update relevant plans to reflect detailed actions under Business-As-Usual conditions, and Alert, Incident and Emergency Alarm Levels, to ensure alignment with this Rainy Season Work Procedure.

DNO&M will routinely share information with RMD, including weather reports and predictions, updated Hotspot locations, known risk areas and the level of resources expected from RMD to support Rainy Season response. Similarly, DNO&M teams will inform RMD of any revisions to the Rainy Season Work Procedure which may impact (and require revision of) the Roads Severe Weather and/or Contingency Plans in order to ensure continuous alignment of policy, actions and responsibilities.

Currently RMD is rolling out a Framework Contractor strategy that will result in six contractors covering the Roads and Roads Assets network. Mobilisation will continue until the first quarter of 2019. The Framework contractors will undertake scheduled safety patrols to monitor all roads and assets in their designated zone. They will report safety issues (including surface water issues) and asset defects to the Roads Management Centre. The RMC will update DNO&M and/or the ECC of any issues that require a response during Rainy Season events.

For areas which experience substantial and hazardous surface flooding that poses unacceptable risk to public safety, it is anticipated that Roads Maintenance will support the Police (the primary agency responsible for road closure in Qatar) at the scene and establish traffic control and diversion should this be

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deemed required. Priority will be given to maintaining safe traffic flow on Primary routes and then subject to resource availability Secondary routes.

#### **8.4 Ashghal Infrastructure Affairs and Programme Management Consultants**

As of the start of the 2018-19 Rainy Season (1 September 2018), the Ashghal Expressways Programme is managed by KBR as the Programme Management Consultant (PMC), however this arrangement will change during the season as KBR demobilise. The PMC has developed and implemented an Inclement Weather Procedure (EXW-GENL-0000-PO-KBR-OR-00137, dated September 2017), based on and aligned to this RSWP. Key personnel within KBR will receive SMS notifications issued by the DNO&M SCADA Team. The PMC has developed triggers appropriate to inclement weather impacts at their sites and to their workforce, covering the situations of rain, wind/sandstorm and heat stress. They have developed a separate SMS notification system to support notification of escalation and de-escalation of their Alarm Levels as their triggers are breached.

The Local Roads and Drainage Programme is managed by PB as the PMC. The PMC has also developed and implemented an Emergency Response Adverse Weather ‘Standard’ (Rev 3, PMC-ST-HSS-022, dated August 2018). The Standard provides guidance to the PMC emergency preparedness and response to adverse weather events covering planning, operation, recovery and training. PB personnel also receive DNO&M SCADA Team SMS notifications, providing them with an opportunity to align Rainy Season event response actions.

Over time, the work being managed by the PMCs is transferring to Infrastructure Affairs Projects Departments. During this Rainy Season, the PMCs and the Infrastructure Affairs Projects Departments will play a greater role in managing Hotspots within IA project boundaries, with their planned activity reflected in the revised FMPs.

## 9 EMERGENCY MANAGEMENT AND KEY ASSESSMENT TEAM

Where situations continue to progress towards an Emergency (rainfall event flooding threatens loss of Ashghal asset service or damage to Ashghal reputation) then an Emergency Manager (EM) will be appointed to manage the Emergency. The proposed EM in the first instance is MDOM. If MDOM is unavailable or the event is particularly severe, then the AA Director should assume the role. If neither is available, the role should be taken up by the nominated MDOM Deputy.

The declaration of an Emergency triggers the deployment of a Key Assessment Team (KAT) to generate mitigating actions. To support the Emergency Manager, the initial proposed KAT roles and personnel are:

Proposed initial KAT member	Main area of contribution
DNO&M Emergency and Customer Services HoS	Provide customer support, communicate with stakeholders, liaise with Police and develop external messaging
DNO&M Workshops HoS	Provide resources and materials, including Contractor liaison, and communicate with Municipalities regarding their needs
DNO&M Pumping Stations HoS	Gather and analyse information to develop tactics for immediate response, containment and recovery, and restore service as quickly as possible
DNO&M Drainage Networks HoS	Gather and analyse information to develop tactics for immediate response, containment and recovery, and restore service as quickly as possible
DNO&M Engineering Services HoS	
Manager Roads Maintenance (MRM)	Traffic management (supported by Roads Emergency Team)

The intent of the KAT is to bring together in a very short time the people with appropriate expertise and experience to assess the situation and recommend appropriate contingency actions to mitigate possible adverse impacts and avoid loss of an asset or damage to reputation. KAT membership should therefore be selected based on expertise available within Ashghal and outsource partners. Depending on the specific event, the KAT may nominate other roles and role holders than those proposed in the table above to support successful execution of its function. A Watchkeeper may also be helpful to maintain records. In certain circumstance it may be helpful to have representatives from external stakeholder agencies (in addition to Baladiya) attend the ECC to coordinate joint responses.

An early requirement is for available and appropriate KAT members to attend and fully establish the AA **Emergency Coordination Centre (ECC)**, which should be activated during large Incidents involving response by multiple Department Sections. Not all KAT members may be able to attend the ECC in every Emergency due to the nature of the Emergency which may require their presence at a site/s, or due to transit restrictions/hazards making attendance impractical. It may also be necessary for nominated KAT members to attend Emergency Centres of other agencies such as Baladiya or NCC, to assist with coordination of response actions between Ashghal and those other agencies.

The AA ECC is located in the northwest corner of the ground floor of the AA office building on Wholesale Market Street, immediately adjacent to the Drainage Networks Management Centre (DNMC). The room is equipped with information resources and materials to aid in the assessment of situations and appropriate responses, including:

- Landline phones (+974 4452 4426) and computer fax (+974 4452 4441)
- NCC Hotline (direct dial to NCC on lift of phone receiver)
- Multiple desktop computers with access to relevant system and weather information
- Portable TV screen for projection of Whatsapp or other information
- Eight large LCD TVs for projection of desktop computer information
- Numerous laptop computers (connectable to network by cable or Wi-Fi)
- Rack mounted asset and network maps
- Asset drawings (hard and soft copies)
- Emergency folder and procedure
- Asset Contingency Plans
- Photocopier/scanner

The ECC room layout is shown in Figure 9.1 below.

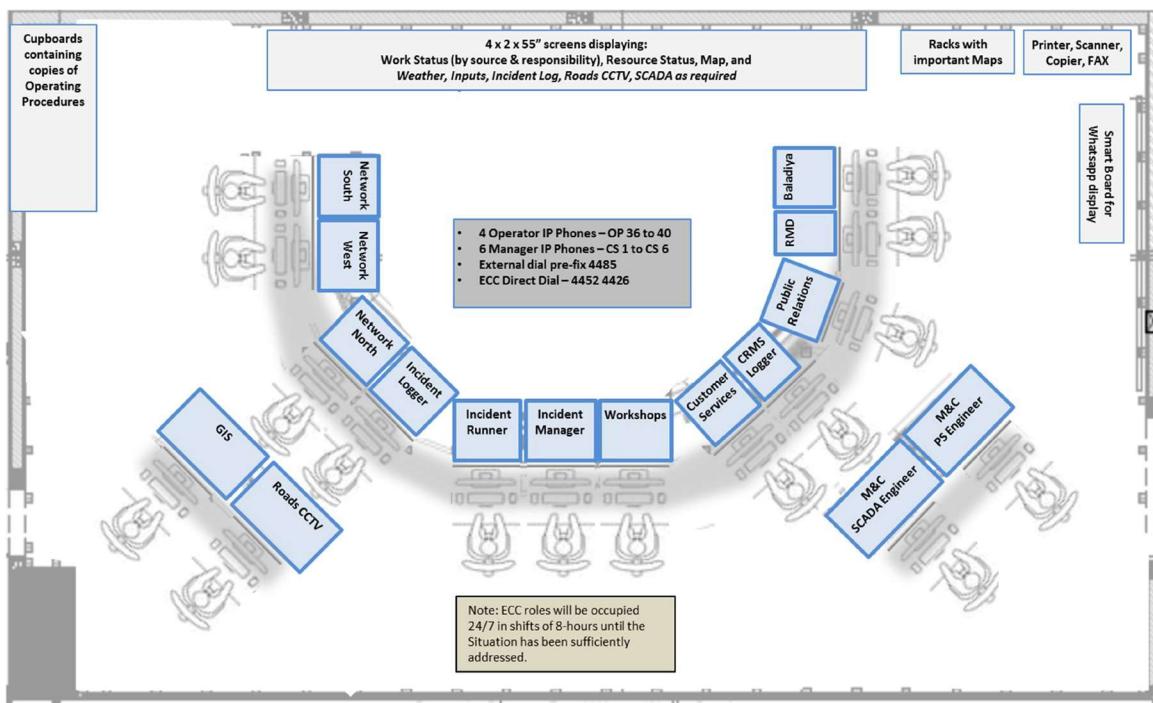


Figure 9.1  
Assets Affairs ECC Room Layout (Assets Affairs Building)

It is anticipated that Baladiya will develop an Emergency Room for each Municipality, with similar functionality to that described above for the Ashghal ECC. Compatibility between Ashghal and Baladiya systems should be established and maintained.

During Emergency situations the KAT should consider a wide range of issues to analyse the situation and recommend priority mitigation actions. The table below lists typical issues that the KAT could explore to converge on the most appropriate suite of actions for response to a specific Rainy Season Emergency.

<b>Example KAT Response Considerations for Emergency in Rainy Season</b>
Extent and duration of past and predicted future rainfall
Extent of actual flood areas and asset/community impacts where actions may be required e.g. lane, road or underpass closures
Current situation at flooding sites including staff and contractor movements and available monitoring
Mitigating actions taken or already planned by personnel such as mobilisation of pumps, DG sets, hoses and other equipment
Allocation of additional resources to mitigate flooding impacts
Possible emergent flood areas and early mitigating actions to protect assets and service e.g. underpass closure and diversion
Notifications completed and planned, including clarity of the messaging and mode of communication
Location of critical assets relative to flooding areas, asset schematics and SCADA information available that could be useful
Back-up facilities / redundancies in place and to what extent these are engaged
Personnel (Ashghal and other) with working knowledge about critical assets impacted by flooding
History of previous failures / issues and approaches to minimize impact of failure
Lessons learnt from previous investigations of failure / emergency situations
Options available to modify system operation to minimize impacts
External agency support in helping control the situation and mitigate potential impacts e.g. Emergency Services enacting temporary traffic management requirements (as detailed in Workzone Traffic Management Guide – Section 3.6 Emergencies and Unplanned Events)
Any National and/or local sensitivities or restrictions in place (e.g. road closures, dewatering activities)

The KAT should recommend mitigating actions to the EM and provide justification and rationale for priority so that the EM can make required decisions in a timely manner. Heads of Section should then instruct staff in line with EM decisions. It is important that staff do not initiate significant actions outside of this Procedure without first communicating with the ECC and checking with the KAT to ensure their actions align with KAT and EM requirements. It is also important that instructions to Heads of Section come from the ECC, so that Sections receive clear instructions on Emergency response actions from one source only.

It is imperative that any actions recommended by the KAT to the EM are aligned with responses of other government agencies and are well coordinated, particularly with NCC and Baladiya. The EM and the KAT should operate on the principle of not putting Ashghal staff into dangerous situations during Incident or Emergency response. Actions received by staff should be reasonable and safe to implement.

Once the Emergency event is under control and its effects have been substantially alleviated, the EM in consultation with the KAT may downgrade the Emergency to an Incident, instruct notification of the Alarm Level downgrade, demobilise the KAT and disestablish the Emergency Control Centre once recovery actions are underway.

## 10 RECOVERY

Recovery is often viewed as the final phase of Emergency management, following Planning, Preparedness and Response. Recovery activities focus on restoration of service, assets and activities back to Business-as-Usual practice. Backup systems are generally not intended for long term use, so once engaged a pathway and timeframe should be agreed to restore full normal operations and retire any backup or temporary measures used to manage the situation. These should be returned, where appropriate, to standby mode. Clean up of any flood areas, should be prioritized on the basis of minimizing impacts to human health, particularly exposure of the public to foul water.

For an Emergency situation involving the possible loss of an Ashghal asset or damage to reputation, the KAT will play a key role in recommending to the EM actions to promote recovery and appropriate sequencing. Where O&M Operating Manuals exist these should be adhered to. The EM or KAT, prior to demobilization of their roles, may recommend follow up monitoring during and after the repair process to aid in the detection of further failures or to monitor the effectiveness of any interventions. Such monitoring may include additional instrumentation and/or asset inspections.

Once an Incident or Emergency event has been recovered, the IM/EM, in consultation with the KAT, may downgrade the Emergency to an Incident, instruct notification of the Alarm Level downgrade, demobilise the KAT and disestablish the Emergency Control Centre once key recovery actions are completed to a satisfactory level. Additionally, when it is no longer appropriate to hold the business at Incident Alarm Level, the IM may downgrade the Alarm Level to Alert, and appoint an appropriate Engineer (for example, the Emergency and Customer Services (E&CS) Engineer) to be responsible for delivery of ongoing minor recovery actions. The IM must communicate these outstanding actions and handover all outstanding customer complaints clearly to the Engineer who will report progress on close out periodically to the former IM and supporting Heads of Section. Field crews performing clean-up work will report periodically to the Engineer during this recovery phase. The responsible Engineer will also advise the former IM and supporting Heads of Section on the suitable timing of downgrading the Alarm Level further to BAU.

Post event, Ashghal Engineers and Technical Staff will work jointly with Baladiya staff to:

- Participate in a physical survey of assets in coordination with Baladiya's Services Teams to confirm any PWA asset damage (Foul Water Network, Ground and Surface Water Network, TWN assets, Roads, Lights);
- Submit preventive maintenance program requests for gully cleaning;
- Follow up and coordinate with Baladiya's Services Affairs Managers to clear roads of any rain impacts using MME General Services Cleaning Department;
- Propose temporary technical solutions to mitigate flooding risks relating to incomplete infrastructure projects, and implement agreed solutions;
- Update flooding hotspot areas;
- Prepare and submit any required technical reports.

## 11 COMMUNICATIONS

Intra and inter-organisational communication, coordination and support play a significant role in successful Incident and Emergency management. For this reason, good communication and coordination is required during periods of ‘Business as Usual’ activity to create good working relationships and understanding around interpretation of this Work Procedure and likely responses of various stakeholder groups and agencies. Sharing of this Work Procedure with key stakeholders during a ‘Business-As-Usual’ period is helpful to promote common understanding of terminology and expected response across agencies. Communicating requirements ahead of time provides an opportunity to align systems and approaches. Such collaboration builds inter-organisational trust and assists with coordination of response during an Emergency.

In the event of an Incident or an Emergency an effective approach to communications is essential to ensure that relevant information is quickly and accurately disseminated to key stakeholders. It is important that those responsible for overall management of the situation establish an accurate central source of information on the status of the situation, through the use of an Incident Log and possibly a Situation Report whiteboard. Information must then be shared in a timely manner with key personnel and stakeholders who have a response or recovery role or who may be adversely impacted by the situation.

It is important, particularly during response to a complex or rapidly evolving situation that adequate resources are assigned to manage communications so that staff are not overloaded and information can be kept up-to-date in real time.

### 11.1 Primary Communication

Primary communication during an Incident or Emergency will be by Mobile GSM. It is essential that key Assets Affairs personnel hold a car charger to ensure continuity of communications during Incident and Emergency response. Appendix B lists primary contact phone details for key Ashghal and stakeholder personnel. This list must be tested at least six monthly and kept up to date so that during response contact can be assured with the right people as listed in Appendix B. Deputies should be named when people are in leave, in accordance with Ashghal practice.

### 11.2 Secondary Communication

Where primary communication capabilities are not working in the event of an emergency e.g. landline and cell phone connections are lost, then secondary communication devices will need to be deployed. Secondary communication during an Incident or Emergency will be by radio via walkie-talkie, compatible with national emergency organisations. During an Incident or Emergency situation, these should be deployed with instructions to key staff and possibly key external stakeholders such as Contractor personnel running key Pumping Stations.

### 11.3 Media Releases

Ashghal has established a Unified Contact Centre to receive and direct all forms of public enquiry. Any media enquiry received must be directed to the Ashghal Public Relations Department in line with Ashghal policy on media management and corporate crisis management.

## 12 DOCUMENTATION AND RECORDS

The Ashghal AA Quality Manual describes the processes and links to the procedures that must be followed for Document Control and the Control of Records. All documents which form part of the AA Management System will be formally registered, controlled and maintained as per AA-QAPR-049 "Document Control" Procedure and QAPR-050 "Document Referencing Procedure". The controls needed for the identification and storage of records are also found in AA-QAPR-049 "Document Control" Procedure.

This Work Procedure document falls under the requirements of Ashghal AA Quality Manual. It should be reviewed and updated at least annually, ahead of the Rainy Season (before September), by relevant Ashghal and Baladiya personnel. The experience and learning of previous Rainy Season events and activities should be drawn upon to update and improve the Procedure. Currently, Ashghal DNO&M hold the source documentation and coordinate the annual update through meetings with the Baladiya Quality Department and meetings with Baladiya Services Affairs Managers.

The following records and checklists associated with Rainy Season preparedness are also examples that are required to adhere to the requirements of the Assets Affairs Quality Manual:

- Flooding Mitigation Plans (FMPs) (to be kept by Drainage NetworksSection)
- Records associated with Customer Complaints (CRMS)
- Pumps, Gensets and other key Workshops equipment records stating their condition and availability (to be kept by Ashghal Workshop HoS in readily locatable files)
- SGW low-rate and high-rate pumping system records stating their condition and workability (to be kept by Ashghal PS HoS in readily locatable files)
- STW records (to be kept by the Ashghal Contracts Management Team as per Contractor detailed procedures)
- Annual Rainy Season Work Procedure review meeting records and special reports for Rainy Season Incidents.

## 13 PRE EVENT TRAINING AND POST EVENT REPORTING

### 13.1 Pre Event Training

The presence of this Work Procedure alone does not assure appropriate Incident and Emergency management by AA. The Procedure should be tested either through actual events or through a range of desktop exercises, field based-exercises and/or multi-agency exercises. Such a training program will increase the likelihood that those responding to a potential failure scenario are familiar with this Procedure, able to efficiently execute the various elements of the Procedure, and able to communicate and coordinate emergency response between relevant stakeholders.

Training should be focussed on familiarising key personnel named in this Procedure with the contents of the Procedure, and testing the Procedure to challenge inherent assumptions, level of detail and planned responses. The action of testing the Procedure is as important as writing the Procedure. As a minimum, a desktop exercise for Assets Affairs personnel named in this Procedure is recommended to be conducted ahead of the Rainy Season to ensure those named are adequately trained. In addition, familiarisation of Procedure requirements should be included as part of new staff inductions where relevant. Ashghal should maintain a record of training.

### 13.2 Post Incident or Emergency Reporting

Post event reporting is important to record actions taken to manage Incidents and Emergencies, so that accurate records exist and can be applied around lessons learned. During Incidents and Emergencies it is important that all staff involved keep a running record of their notifications, decisions, actions and communications, particularly around receipt and execution of recommendations or actions to be undertaken. This can be in the form of confirmation emails or through the use of a work diary. These individual records can be collated to form a single report to relevant Managers and/or Directors of Ashghal and/or Baladiya which should comprise:

- A description of the event or situation
- Evaluation (over time) using the Alarm Level Escalation flowchart
- Personnel involved and roles assigned (rosters)
- Actions taken over time to manage the situation and mitigate impacts
- A visual/photo record of the situation (where possible)
- Notifications made or received, particularly around external stakeholders
- How the situation was resolved

The Ashghal post Incident or Emergency Report should be prepared by the Emergency and Customer Services (E&CS) Section for Manager DNO&M and reviewed by all DNO&M Heads of Section for lessons learned, particularly where asset failure modes materialised. Review of the report along with post event debrief sessions could prompt investigations and/or mitigating actions prior to future rainfall events.

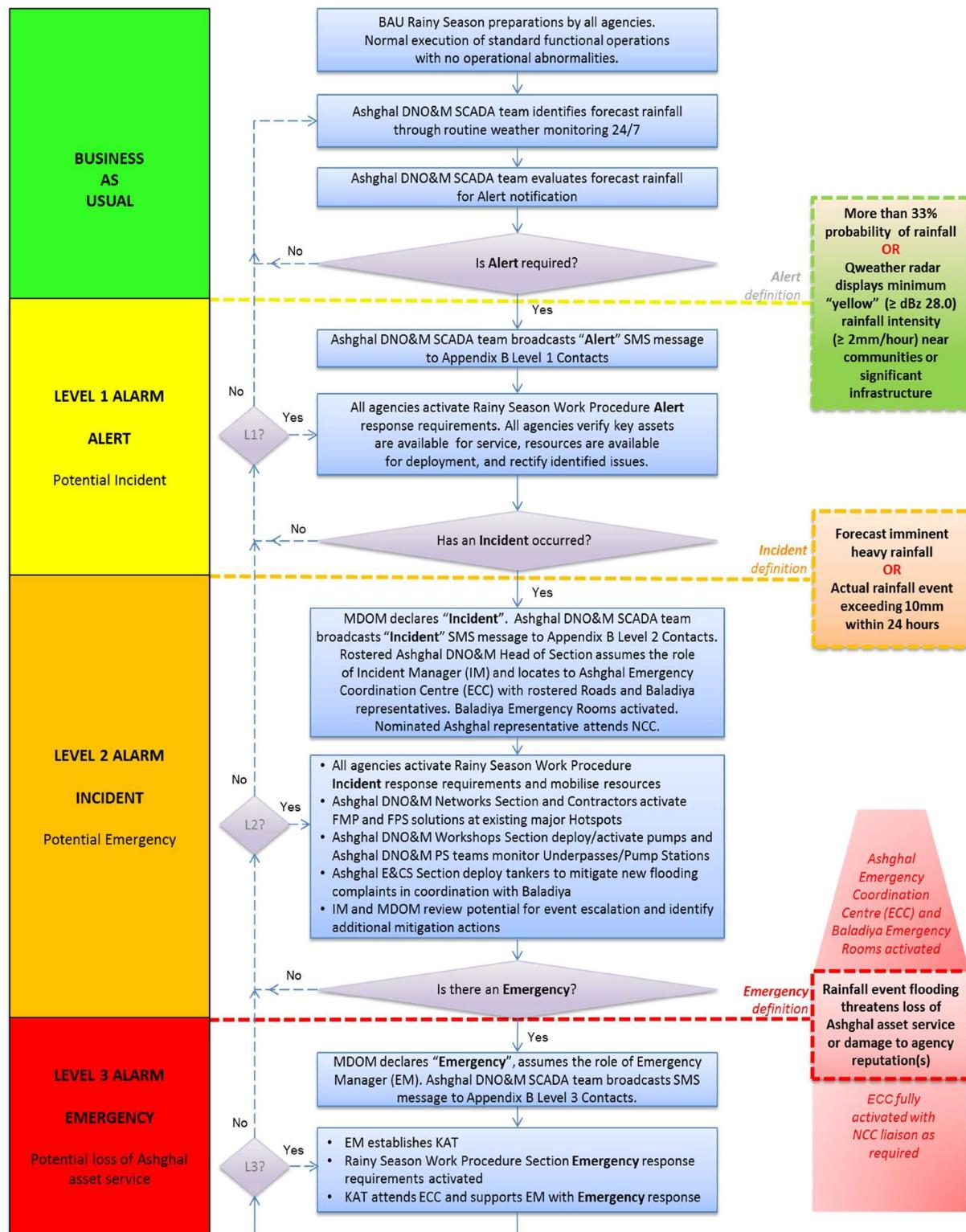
## APPENDIX A ALARM LEVEL ESCALATION FLOWCHART AND WEATHER WEBSITES

This Appendix contains:

- Alarm Level Escalation Flowchart
- Qatar weather websites

The Alarm Level Escalation Flowchart outlines generic responses, however it is acknowledged that actual response will be event and context specific. This flowchart is intended for ready reference by Ashghal and Baladiya personnel to illustrate steps to be taken to help manage a rainfall related event or scenario that could develop into an Incident or Emergency. Since it is not possible to list all possible actions on the chart these are covered within the Procedure itself. During event management additional actions may be taken by personnel specific to the exact nature of the situation being managed. Learnings from post Incident and Emergency debriefings and reflection of personnel involved in management of such situations should be fed back to improve the flowchart and the overall Work Procedure.

## Alarm Level Escalation Flowchart



## Qatar Weather Websites

The following weather websites are to be used to gain an accurate forecast of pending weather conditions.

Website	% chance rain	Actual rainfall	Rainfall history	Radar imaging	Hourly forecast	3-7 day forecast	10-45 day forecast
<a href="http://www.qweather.gov.qa">www.qweather.gov.qa</a>		✓		✓	✓	✓	
<a href="http://www.wunderground.com">www.wunderground.com</a>	✓		✓		✓	✓	14
<a href="http://www.theweathernetwork.com">www.theweathernetwork.com</a>	✓		✓		✓	✓	14
<a href="http://www.weather.com">www.weather.com</a>	✓		✓	✓	✓	✓	10 & 30
<a href="http://www.accuweather.com">www.accuweather.com</a>	✓	✓	✓	✓	✓	✓	45
<a href="http://www.msn.com/en-us/weather">www.msn.com/en-us/weather</a>	✓		✓	✓	✓	✓	10
<a href="http://www.bbc.com/weather">www.bbc.com/weather</a>					✓	✓	10
<a href="http://www.ncms.ae/en">www.ncms.ae/en</a>		✓	✓	✓	✓		
<a href="http://www.windguru.cz">www.windguru.cz</a>		✓	✓	✓	✓	✓	7

## APPENDIX B INCIDENT AND EMERGENCY CONTACTS

This Appendix contains phone contact information for key internal and external stakeholders who may require notification in the event of an Incident or Emergency situation. This table must be regularly reviewed and contact details verified during Business as Usual operations.

### EMERGENCY NOTIFICATIONS CONTACT LIST

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>Ashghal President and Directors</b>					
<b>President Ashghal</b> His Excellency Dr Saad Bin Ahmad Al-Muhannadi	4495 1112	Held by AA Director and MDOM	✓	✓	✓
<b>Director Asset Affairs</b> Ahmed Mohamed Sharif Al Ahmad	4452 7444	5503 7555	✓	✓	✓
<b>Director Infrastructure Affairs</b> Mohammed Masoud Al Marri	4495 0400	6656 3339	✓	✓	✓
<b>Director Building Affairs</b> Lahdan Sager L H Al-Mohanadi	4495 0070	5550 0507	✓	✓	✓
<b>Acting Director Technical Support Affairs</b> Abdulsamad Mohd Al-Makei	4495 0101	5550 8331	✓	✓	✓
<b>Director Shared Services Affairs</b> Meshal Sultan Al-Hitmi	4495 0003	5586 3303	✓	✓	✓
<b>Ashghal Corporate Office</b>					
<b>Technical Office Manager</b> Ahmad Al Ansari	4495 1135	5581 3938	✓	✓	✓
<b>Manager Contract Department</b> Ghanem Rashid Al-Mansoori	4495 0077	5555 5375	✓	✓	✓
<b>Legal Affairs Department Manager</b> Abdulla Mohamed M A Al-Marri	4495 0100	7778 8008	✓	✓	✓
<b>General Services Department Manager</b> Yousuf Ahmad A H Al Obaidli	4495 0505	5581 3131	✓	✓	✓
<b>Quality and Safety Manager</b> Khalid Mohd I Al-Emadi	4495 0020	5550 7850	✓	✓	✓
<b>Public Relations Advisor</b> Khalid Yahia Saber Badr	4495 1778	6693 8916	✓	✓	✓
<b>Buildings Projects Manager</b> Abdulmohsin Hassan M H Al-Rashid	4035 3553	5555 3600	✓	✓	✓
<b>Legal Affairs Department Manager</b> Abdulla Mohamed Al Ghawas Al-Marri	4495 0100	3003 0011	✓	✓	✓
<b>Design Management Building Manager</b> Abdulla Mohamed R F Al-Ajmi	4495 1771	5587 6686	✓	✓	✓
<b>Human Resources Department Manager</b> Saif Ali Saad Al-Kaabi	4495 0808	5553 4664	✓	✓	✓
<b>Assistant of Highway Department Manager</b> Bader Mohammed H A Darwish	4035 3330	5599 9090	✓	✓	✓
<b>Ashghal Contact Centre</b>	188 or 4495 1111				

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>DNO&amp;M</b>					
<b>Manager DNO&amp;M (MDOM)</b> Khalid Ahmad Al-Obaidli	4452 7222	3333 8801	✓	✓	✓
<b>Assistant of DNO&amp;M (AMDOM)</b> Nasser Al Yami	4452 7171	5556 8559	✓	✓	✓
<b>Utility Advisor</b> William McLean	4452 7274	5590 8103	✓	✓	✓
<b>Acting Head of Engineering Services</b> Amir Osman Ahmed Babiker	4452 7131	5567 2536	✓	✓	✓
<b>Head of House Connections</b> Hamad Nasser Al-Hajri	4452 7277	5550 3546	✓	✓	✓
<b>Head of Workshops</b> Mohd Abdulla Al-Malki	4452 7100	5559 5990	✓	✓	✓
<b>Senior Mechanical Engineer</b> Adnan Mohd Abdulla	4452 7605	7001 2306	✓	✓	✓
<b>Senior Mechanical Engineer</b> Yaser A.Reda A. A. Al-Kharaz	4452 7160	5554 2117	✓	✓	✓
<b>Mechanical Engineer</b> Mohsin Khudadad Dura	4452 4489	6607 7670	✓	✓	✓
<b>Engineer - TL Instrumentation</b> Mangesh Suradkar	4452 7292	7039 2182	✓	✓	✓
<b>Engineer</b> Mohd Sazzadul Islam	4452 7149	7018 8264	✓	✓	✓
<b>Mechanical Inspector</b> Narangoli Kunh Abdulla	4452 7165	5518 3167	✓	✓	✓
<b>Mechanical Technician</b> K T Abdullah	4452 7157	5581 2905	✓	✓	✓
<b>Plumbing Foreman</b> Syed Najeebuddin	4452 7166	5585 4669	✓	✓	✓
<b>Mechanical Supervisor</b> Faraj Muftah S Al-Kuwari	4452 7143	5583 2519	✓	✓	✓
<b>Mechanical Supervisor [NCC Attendee]</b> Meshal Soud S K Al-Kaabi	4452 7162	5559 9936	✓	✓	✓
<b>Welding Technician</b> Mansour Abdulla A M Fekri	4452 7153	6666 9889	✓	✓	✓
<b>Drainage Inspector</b> Sultan Ali Sultan Abdulla Al-Kuwari		6666 2026	✓	✓	✓
<b>Acting Head of Drainage Networks</b> Abdelhamid Mohamad El Batal	4452 7239	5582 0336	✓	✓	✓
<b>Senior Drainage Engineer</b> Hugo Miguel Da Silva Ferreira	4452 4403	5535 0604	✓	✓	✓
<b>Engineer - Structural</b> Shakeel Ahmad S. Hasan	4452 7279	5559 4207	✓	✓	✓
<b>Engineer – Drainage</b> Rui Miguel Candido Pomares	4452 4406	5545 7853	✓	✓	✓

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>Senior Civil Engineer</b> Mohd Radzi Bin Haji Othman	4452 7179	5594 7632	✓	✓	✓
<b>Engineer – Civil</b> Roberto Martin Perez Porto	4452 4483	6642 0782	✓	✓	✓
<b>Engineer – Civil</b> Olga Gomez Tello	4452 2142	5062 9707	✓	✓	✓
<b>Senior Civil Engineer</b> David Manuel da Silva Pereira	4452 2148	3366 3901	✓	✓	✓
<b>Senior Drainage Engineer</b> Ashraf Abu Elfotouh Ibrahim	4452 2219	5549 4748	✓	✓	✓
<b>Engineer – Civil</b> Hosam Mohsen		3103 3301	✓	✓	✓
<b>Engineer – Civil</b> Antonio Cesar Cuesta Lopez	4452 4412	6650 1192	✓	✓	✓
<b>Engineer – Civil</b> Mouatsum El Souda	4452 7297	5502 2121	✓	✓	✓
<b>Engineer – Civil</b> Jose Manuel Gonzalez Ramos	4452 4409	6642 7650	✓	✓	✓
<b>Civil Engineer</b> Edward Thomas	4452 2147	7755 1943	✓	✓	✓
<b>Civil Engineer</b> Riza Ozan Goray		5001 0636	✓	✓	✓
<b>Engineer – Civil</b> Gonzalo De Garnica	4452 2217	3075 8352	✓	✓	✓
<b>Engineer – Civil</b> Mohd Jichi	4452 7180	3119 1810	✓	✓	✓
<b>Engineer – Civil</b> Abdullah Saleh Kohma	4452 2133	7777 4134	✓	✓	✓
<b>Engineer – Civil</b> Ahmed Idress	4452 2393	3383 7820	✓	✓	✓
<b>Head of Treated Water Network</b> Khalid Al Jaber	4452 7474	5577 7549	✓	✓	✓
<b>Civil Engineer</b> Pedro Garcia Monasor	4485 2138	5028 0112	✓	✓	✓
<b>Civil Engineer</b> Anandabalaji Veeraiyan		5553 0653	✓	✓	✓
<b>Civil Engineer</b> Prasanth Kumar Jangam	4485 2169	3122 5814	✓	✓	✓
<b>Drainage Supervisor [NCC Attendee]</b> Qais Ahmed M A Rustom	4452 7240	5588 1551	✓	✓	✓
<b>Head of Treatment</b> Rashid Alkhaldi	4492 6003	5582 1658	✓	✓	✓
<b>Engineer - Technical Assistant All STWs &amp; PTPs</b> Munawar Abrar Hussain Mohammad Hussain	4452 7230	3340 0401	✓	✓	✓
<b>CMT Manager - IA STW</b> Naveen Francis	4452 7208	7757 4001	✓	✓	✓

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>CMT Manager - DS STW</b> Osama Mohammad Nasr Eldin	4495 0752	3020 0062	✓	✓	✓
<b>CMT Manager - DW STW</b> Mohamed Saleem Faraj M AlQrinawi	4452 7401	5597 2777	✓	✓	✓
<b>CMT Manager – DN STW</b> Olivier Marius Marchand	4485 2177	3326 2852	✓	✓	✓
<b>CMT Manager - PTPs Framework Contract</b> Hany Houssein Abdel Karim Abou Jazar	4495 0147	5581 7600	✓	✓	✓
<b>CMT Engineer - Al Lusail STW</b> Zafar Abdul Jalil	4452 4436	5591 9145	✓	✓	✓
<b>CMT Manager - Al Khor STW</b> Mohammad Desouki G Desouki	4485 2156	3376 4492	✓	✓	✓
<b>CMT Mechanical Engineer - PTPs Framework Contract</b> Vigneswaran Ginggataram	4452 7147	5593 4012	✓	✓	✓
<b>CMT Operations Engineer - PTPs Framework Contract</b> Lingesveeramani Maruthai	4452 7269	6626 6981	✓	✓	✓
<b>CMT Mechanical Engineer - IA STW</b> Mohammad Khader	4452 7429	3361 6579	✓	✓	✓
<b>CMT Instr. Engineer – DS STW</b> Feroz Pasha Mohammad	4485 2173	3346 8186	✓	✓	✓
<b>CMT Engineer – Doha North STW</b> Ahmed Mohammad Al Hashemi	4485 2210	6648 0686	✓	✓	✓
<b>Acting Head of Pumping Stations (PS HoS) [NCC Attendee]</b> Ali Hassen Al-Muhannadi	4452 7171	5585 5054	✓	✓	✓
<b>Senior Mechanical Engineer</b> Aimen Mohammed Ahmed Sideeq	4452 7293	6674 7773	✓	✓	✓
<b>Senior Electrical Engineer</b> Fathy Mohammed	4452 7263	5581 7378	✓	✓	✓
<b>Electrical Engineer</b> Sunny Jacob	4452 7262	5597 7568	✓	✓	✓
<b>Mechanical Engineer</b> Vishnu C V	4452 7261	5581 5697	✓	✓	✓
<b>Electrical Engineer</b> Ahmed Salim Taha	4452 7241	5560 2296	✓	✓	✓
<b>Mechanical Engineer</b> Ahmed Attia	4452 7246	5585 5916	✓	✓	✓
<b>Mechanical Engineer</b> Sreejith Karunakaran	4452 7229	3310 6199	✓	✓	✓
<b>Electrical Engineer</b> Mohandoss Devadoss	4485 2153	3370 5733	✓	✓	✓
<b>Electrical Supervisor</b> Saif Said Al-Naimi	4452 7144	5555 6159	✓	✓	✓
<b>Head of Centralized Control</b> Abdulla Shamsan I Al-Sada	4452 7258	5582 7311	✓	✓	✓
<b>Senior Control Room Specialist</b> Aziz Hassan Abdurabu Hassan	4452 7227	5582 2823	✓	✓	✓

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>SCADA Expert</b> Azhari Amir	4452 7115	3330 4573	✓	✓	✓
<b>ITS Engineer</b> Mohd Sazzadul Islam	4452 7149	7018 8264	✓	✓	✓
<b>Senior Engineer - Instrument &amp; Control</b> Mumtaz Alam Ansari	4452 7235	6648 2171	✓	✓	✓
<b>Head of Emergency &amp; Customer Service [NCC Attendee]</b> Thani Kulaihi	4452 7248	5581 9745	✓	✓	✓
<b>Customer Service Engineer</b> Francesco Fidone	4452 2145	6687 9896	✓	✓	✓
<b>Customer Service Engineer</b> Yasser Ata Mohamed El Abd	4452 7271	5557 7347	✓	✓	✓
<b>Customer Service Engineer</b> Suresh Talreja	4452 7387	5047 2706	✓	✓	✓
<b>Customer Service Engineer</b> Momen Wael Anaya	4452 4526	5544 5471	✓	✓	✓
<b>Administration Clerk</b> Kefah Mansoor Al-Dhufairi	4452 4420	5567 5257	✓	✓	✓
<b>Acting Head of Monitoring Section (M HoS)</b> Dr Mohanad Alani	4452 7280	5579 4221	✓	✓	✓
<b>Safety Engineer</b> Francisco Tolos Salvador	4452 4402	5534 0260	✓	✓	✓
<b>Safety Engineer</b> Pedro Alexander	4485 2139	5546 8319	✓	✓	✓
<b>Ashghal AA DNO&amp;M Stores</b> Samer Wahid	4495 0394	5539 0297	✓	✓	✓
<b>Gulf Warehousing Company</b> After Hours – Ahmed Melki		5584 9666	✓	✓	✓
<b>DNO&amp;M Emergency Coordination Centre (ECC)</b> Located at Asset Affairs Depot, Wholesale Market Street, Main Office	4452 4426 (ph) 4452 4441 (fx)				
<b>SCADA Team Phone</b>	4452 7456	5581 6860	✓	✓	✓
<b>Senior Risk Engineer</b> Vipinkumar Vijayakumar	4452 4531	3306 8334	✓	✓	✓
<b>Wabag Roots (PS and PTP Framework Contractor)</b>					
<b>Framework Manager (Primary Contact) - PS</b> Mr Balraj Kennedy		3361 3553	✓	✓	✓
<b>Project Manager</b> Ibrahim Memon		5082 4036	✓	✓	✓
<b>HSE Engineer (Secondary Contact)</b> Ranjit Kumar		3335 6180	✓	✓	✓
<b>HSE Officer (Secondary Contact)</b> Yousuf Khan		3359 4220	✓	✓	✓
<b>Acting Framework Manager - PTP</b> Christopher Gunaseelan		5533 9695	✓	✓	✓

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>Secondary Contact</b> Anthony Selvaraj		5030 8326	✓	✓	✓
<b>HSE Officer (Secondary Contact)</b> Adrian Marino		5067 4983	✓	✓	✓
<b>Metito (Overseas) Qatar (PS and PTP Framework Contractor)</b>					
<b>Framework Manager (Primary Contact) - PS</b> Amr Sabry		5582 4081	✓	✓	✓
<b>Project Manager (Primary Contact)</b> Syed Hassan		5514 5532	✓	✓	✓
<b>Secondary Contact</b> Sameh Ahmed		5589 5831	✓	✓	✓
<b>Secondary Contact</b> Dinesh Bharadwaj		3334 4177	✓	✓	✓
<b>Secondary Contact</b> Radha Krishna		5517 3475	✓	✓	✓
<b>Secondary Contact</b> Ahmed Nagib		3319 1854	✓	✓	✓
<b>Secondary Contact</b> Ibrahim Yousef		7407 5495	✓	✓	✓
<b>Framework Manager (Primary Contact) – PTP</b> Mina Yacoub		5586 6178	✓	✓	✓
<b>Deputy Framework Manager (Primary Contact)</b> Preetesh Patil		5584 9827	✓	✓	✓
<b>Project Manager (Primary Contact)</b> Nader Khalil		5036 7040	✓	✓	✓
<b>Process Engineer (Secondary Contact)</b> Adarsh Varghese		7703 8289	✓	✓	✓
<b>Mechanical Engineer (Secondary Contact)</b> Ali Yousef		3319 3850	✓	✓	✓
<b>Instrumentation Engineer (Secondary Contact)</b> Gajanan Arabhavi		5572 0475	✓	✓	✓
<b>Electrical Engineer (Secondary Contact)</b> Faith Samuvel		5514 7892	✓	✓	✓
<b>HSE Officer (Secondary Contact)</b> Eliseo Bermido		3392 3053	✓	✓	✓
<b>Waagner Biro (PS and PTP Framework Contractor)</b>					
<b>Framework Manager (PS)</b> Tarek Fathallah		7049 4577	✓	✓	✓
<b>Acting Project Manager</b> Emad Ghubashi		7046 7979	✓	✓	✓
<b>Mechanical Engineer</b> Amr Temraz		7060 4247	✓	✓	✓
<b>Instrument Engineer</b> Mohd Mansour		3058 1965	✓	✓	✓
<b>Electrical Engineer</b> Ashraf Bakra		7046 8181	✓	✓	✓

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>Framework Manager (PTP)</b> Hisham Abdel Gawad		3006 4455 / 7748 8653	✓	✓	✓
<b>Project Manager</b> Omer Abdelmagid		7048 0613	✓	✓	✓
<b>Mechanical Engineer</b> Saman Kumara		3020 9239	✓	✓	✓
<b>Instrument Engineer</b> Hassan Khalil		3338 4788	✓	✓	✓
<b>Al Jemailiya/Al Otouriyah/Al Shahaniyah Link Road (PS Contractor)</b>					
<b>KBR</b> K.A.B. Menon		7479 5647	✓	✓	✓
<b>Mace Qatar Mechanical and Civil Engineering (TSE Framework Contractor)</b>					
<b>Framework Manager (Primary Contact)</b> Abdel Ali Daher		3354 8952	✓	✓	✓
<b>Secondary Contact</b> Amir Mehmoud		3012 1844	✓	✓	✓
<b>Secondary Contact</b> Farouk Abdel Aziz		3319 6876	✓	✓	✓
<b>Temalco Contracting and Trading Co (TSE Framework Contractor)</b>					
<b>Framework Manager (Primary Contact)</b> Mezbah Udeen Ahmed		5030 5283	✓	✓	✓
<b>Secondary Contact</b> Munawar Saeed		3322 9112	✓	✓	✓
<b>Secondary Contact</b> Mohideen Abdul Cader Aslam Sajith		5560 9115	✓	✓	✓
<b>QTCG-Mirrikh JV (TSE Framework Contractor)</b>					
<b>Framework Manager (Primary Contact)</b> Salman Farooq		7049 1806	✓	✓	✓
<b>Secondary Contact</b> Alaa Amin Sulaiman		6661 6016	✓	✓	✓
<b>Secondary Contact</b> Odayattil Chandran Shaji		5587 9654	✓	✓	✓
<b>GCC-WADE ADAMS JV (TSE Framework Contractor)</b>					
<b>Framework Manager (Primary Contact)</b> Sameer Bhedi		5586 4708	✓	✓	✓
<b>Secondary Contact</b> Mohammed Fawzy		3322 6133	✓	✓	✓
<b>Petroserv (TSE Framework Contractor)</b>					
<b>Framework Manager (Primary Contact)</b> Mr. Gilbert Akik		5579 8973	✓	✓	✓
<b>Secondary Contact</b> Mr. Kamel Balid		7712 6425	✓	✓	✓

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>Boom Construction Company WLL</b> (TSE Framework Contractor)					
<b>Framework Manager (Primary Contact)</b> Joseph Yazbek		5588 3463	✓	✓	✓
<b>Secondary Contact</b> Ronaldo Ignacio		6675 0418	✓	✓	✓
<b>Galfar Al Misnad</b> (SRRR Framework Contractor)					
<b>Primary Contact</b> Bineesh Arjunan		7020 0279	✓	✓	✓
<b>Secondary Contact</b> Alex Kuriakose		7020 0250	✓	✓	✓
<b>Secondary Contact (Framework Manager)</b> N Ravindran		7020 0212	✓	✓	✓
<b>Petroserv</b> (SRRR Framework Contractor)					
<b>Framework Manager (Primary Contact)</b> Marc Bechara		3354 8302	✓	✓	✓
<b>Secondary Contact</b> Lakshmana Prasad		6609 5857	✓	✓	✓
<b>Mace Qatar Contracting and Engineering</b> (SRRR Framework Contractor)					
<b>Framework Manager (Primary Contact)</b> Kamal Thabet		5588 0458	✓	✓	✓
<b>Mirrikh QTCG JV</b> (SRRR Framework Contractor)					
<b>Framework Manager (Primary Contact)</b> Muhammed Alam Sher		5599 4288	✓	✓	✓
<b>Temalco</b> (SRRR Framework Contractor)					
<b>Framework Manager (Primary Contact)</b> Roy Joy Abraham		5064 9289	✓	✓	✓
<b>Velosi Certification Co.</b> (SRRR Framework Contractor)					
<b>Framework Manager (Primary Contact)</b> Jerry Albone		5512 8477	✓	✓	✓
<b>Velosi Certification Co.</b> (SIC Framework Contractor)					
<b>Framework Manager (Primary Contact)</b> David Peck		3330 7257	✓	✓	✓
<b>Secondary Contact</b> Robert Calderon		7471 9844	✓	✓	✓
<b>Secondary Contact</b> Shyju Kutingarra		3055 2532	✓	✓	✓
<b>Secondary Contact</b> Francis Cunanan		5512 4186	✓	✓	✓
<b>Secondary Contact</b> Rafeequ Perumal Thaze		7737 9441	✓	✓	✓

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>Mace Qatar Contracting and Engineering (SIC Framework Contractor)</b>					
<b>Framework Manager (Primary Contact)</b> Ahmed Kassem		3012 5529	✓	✓	✓
<b>Secondary Contact</b> Ganesan Vee		7008 1564	✓	✓	✓
<b>Secondary Contact</b> Busayo Victor		3007 3139	✓	✓	✓
<b>Metito (Overseas) Qatar (SIC Framework Contractor)</b>					
<b>Framework Manager (Primary Contact)</b> Ehab Fathi		3378 5036	✓	✓	✓
<b>Secondary Contact</b> Ahmed Hani		6613 3140	✓	✓	✓
<b>Secondary Contact</b> Abid Iqbal		3352 3084	✓	✓	✓
<b>Secondary Contact</b> Yasir Naushad		7070 6581	✓	✓	✓
<b>Licuas Trading &amp; Contracting (SICS Framework Contractor)</b>					
<b>Framework Manager (Primary Contact)</b> Javier Gonzalez		5093 4616	✓	✓	✓
<b>Secondary Contact - Emergency Number</b> Work on rotation: Mustafa/Rizwan/Aziz (24h/7days)		5548 3682	✓	✓	✓
<b>Dukhan Highway (Construction Contractor)</b>					
<b>Project Director</b> Bassam Salem		5580 8314	✓	✓	✓
<b>KBR</b> Francisco Casero		3375 9238	✓	✓	✓
<b>C4b</b>					
<b>Business Director</b> Roger Vreugdenhil	4452 7435	6698 0368	✓	✓	✓
<b>Operations Manager</b> Nigel Kent	4452 7442	6649 6292	✓	✓	✓
<b>Support Services SDP Lead</b> Ahmed Nada	4452 7148	3329 6034	✓	✓	✓
<b>Customer Services</b> Jenny Steel	4452 7282	6661 3467	✓	✓	✓
<b>O&amp;M SDP Lead</b> Rajesh Kumar	4452 4599	3391 2023	✓	✓	✓
<b>GIS Specialist</b> Nina MacVinish	4452 4597	5513 7959	✓	✓	✓
<b>ICT Engineer</b> Hisham Hassan	4452 4463	5029 8946	✓	✓	✓

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>Roads Maintenance</b>					
<b>Roads Maintenance Manager (MRM)</b> Ahmad Rashid M Al-Kubaisi	4452 7333	5552 7025	✓	✓	✓
<b>Senior Contracts Specialist</b> Brian Stanforth	4452 7460	6606 9765	✓	✓	✓
<b>Safety Ops and Traffic Controls HoS</b> Bader Sulaiman Al-Hamadi	4495 0673	7753 7777	✓	✓	✓
<b>Signage HoS</b> Ali Mohamed S A Al-Naimi	4452 7200	5505 0492	✓	✓	✓
<b>Roads Maintenance HoS</b> Abdulla A.Khaleq Al Yafei	4452 7373	5588 6671	✓	✓	✓
<b>Street lighting HoS</b> Khalifa Salih A K AlKhelaifi	4452 7377	5583 4690	✓	✓	✓
<b>Expressways Lead</b> Sridhar Satyanarayana Raviprolu	4452 4499	3346 3707	✓	✓	✓
<b>Highways Operations and Maintenance Expert</b> Mohammed Azeem Tayab	4452 7307	5579 8968	✓	✓	✓
<b>Emergency Response Manager</b> Mubarak Al-Buainain	4485 2518	5554 7393	✓	✓	✓
<b>RMC Manager</b> David Cronin	4452 4652	3374 2221	✓	✓	✓
<b>Senior Maintenance Engineer</b> Ramurathinam Muthuraman	4452 7376	3346 8975	✓	✓	✓
<b>Senior Maintenance Engineer</b> Mohd Firdaus Bin Amir	4452 7461	3343 8269	✓	✓	✓
<b>Senior Bridges Engineer</b> Suresh Kumar	4452 7344	3349 8099	✓	✓	✓
<b>Bridges Engineer</b> Thangapandiyar Mariappan	4452 7395	3386 7665	✓	✓	✓
<b>Senior Roads Engineer</b> Mariano Jabines	4452 7326	5518 7250	✓	✓	✓
<b>Electrical Engineer</b> Hosameldin Mahmoud Almezayen	4485 2415	5532 1776	✓	✓	✓
<b>Senior Roads Engineer</b> Raymundo Vibal	4452 7315	5563 1531	✓	✓	✓
<b>Senior Structural Engineer</b> Mohammed Fasiuddin	4452 7328	5597 0126	✓	✓	✓
<b>Structural Engineer</b> Wilfredo Salgado	4452 7346	3365 8647	✓	✓	✓
<b>Structural Engineer</b> Anil Biswas	4452 7398	3354 7625	✓	✓	✓
<b>Bridges Engineer</b> Prabhakar Kumar	4452 7332	6675 7482	✓	✓	✓
<b>Traffic Engineer</b> Mohammad Shakil Ansari	4452 7301	6647 1794	✓	✓	✓

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>Senior ITS &amp; Roads Safety Engineer</b> Emad Hassan Yousuf	4452 7312	6656 2120	✓	✓	✓
<b>Roads Lighting Engineer</b> Hazem Abdel Rahman Husein Elheresh	4452 7360	5005 7534	✓	✓	✓
<b>Roads Safety Engineering Advisor</b> Fabian Marsh	4452 7358	5314 3428	✓	✓	✓
<b>Road Safety Engineer</b> Robert Dela Cruz	4452 4508	5513 9469	✓	✓	✓
<b>Roads Safety Engineer</b> Mustafa Reja Ansari	4452 4510	6684 3120	✓	✓	✓
<b>Electrical Engineer</b> Mohamad Anwar Alzaim	4452 7354	5512 5303	✓	✓	✓
<b>Safety Team Lead</b> Edward Caleon	4452 7302	3349 3639	✓	✓	✓
<b>Tunnels (ITS Team)</b> Antoni Perez	4485 2412	6657 2096	✓	✓	✓
<b>Traffic Signals Engineer</b> Jaworski Pua	4452 7303	3349 2850	✓	✓	✓
<b>Roads Engineer (Framework)</b> John Paul Mamawal	4452 7349	7758 2541	✓	✓	✓
<b>Project Engineer</b> Macarao Mama	4452 4679	3398 1594	✓	✓	✓
<b>Roads Engineer</b> Yahsin Sahipa	4452 4590	7732 0477	✓	✓	✓
<b>Roads Engineer (Framework)</b> Fernan Palete	4452 7327	5512 4463	✓	✓	✓
<b>Roads Engineer</b> Ron Carlo Pingol	4452 7345	3141 6868	✓	✓	✓
<b>Roads Engineer</b> Labernie Galang	4452 7304	3349 2841	✓	✓	✓
<b>Maintenance Engineer</b> Shamim Ahmad Khan	4452 7391	3310 3784	✓	✓	✓
<b>Roads Engineer (Framework)</b> Rogelio Reyes	4452 7472	7755 9092	✓	✓	✓
<b>Roads Engineer</b> Ruben Guimara Ortega	4485 2418	5547 6314	✓	✓	✓
<b>Quality Engineer</b> Samuel Jairaj Yeeda	4452 7331	6647 6164	✓	✓	✓
<b>Roads Inspector</b> Javeed Salim Wani	4452 4593	7046 3305	✓	✓	✓
<b>Safety Team</b> Emanuel Yap	4452 4596	6670 4529	✓	✓	✓
<b>Safety Team</b> Victor Valero	4452 4689	6679 2732	✓	✓	✓
<b>Supervisor</b> Abdulla Al Hajri	4452 4501	5517 3030	✓	✓	✓

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>Technical Support Technician</b> Crisanto Lopez	4452 4689	6679 1637	✓	✓	✓
<b>Roads Inspector Frameworks</b> Darwin Palomares	4485 2485	7796 9455	✓	✓	✓
<b>Roads Inspector</b> Henry Mendoza Reyes	4452 7336	7401 0629	✓	✓	✓
<b>Roads Inspector Frameworks</b> Dondon Orolaza	4452 7446	7409 8927	✓	✓	✓
<b>Roads Inspector Frameworks</b> Sherwin Cunanan	4452 7366	7408 9604	✓	✓	✓
<b>Roads Inspector Frameworks</b> Joseph Macairan	4452 4575	3308 4357	✓	✓	✓
<b>Roads Inspector Frameworks</b> Roldan Apillanes	4452 4561	5523 5768	✓	✓	✓
<b>Roads Inspector</b> Saleh Al Marri	4452 4504	5582 2006	✓	✓	✓
<b>Roads Inspector</b> Jassim Moh. Al Sulaiti	4452 4505	6665 5882	✓	✓	✓
<b>Measurement Engineer</b> Venkata Rao.Vustela	4452 4509	3305 6873	✓	✓	✓
<b>Street Inspector - O&amp;M</b> Darwin Palomares	4452 2485	7796 9455	✓	✓	✓
<b>Electrical Technician</b> Abd Mohamed Nasser AL-Harbi	4452 7369	3380 6357	✓	✓	✓
<b>Health and Safety Engineer</b> Mudasir Ali	4452 7352	6654 2820	✓	✓	✓
<b>Roads Safety Engineering Advisor [NCC Attendee]</b> Hassen Mohammed H A Al-Hamadi	4452 7311	5580 4037	✓	✓	✓
<b>Roads Maintenance Contractors</b>					
<b>Al Jaber &amp; Makhlof</b> Saamer Obid		6621 3232	✓	✓	✓
<b>Al Sarh</b> Anotnio J Zabala		6664 4135	✓	✓	✓
<b>Averda</b> Johnson Varughese		7037 9176	✓	✓	✓
<b>Bin Omran</b> Sassine Nacheff		5581 6810	✓	✓	✓
<b>Boom Construction</b> John Karam		5589 0583	✓	✓	✓
<b>Castle Construction</b> Marpi Skaria		5589 4039	✓	✓	✓
<b>Electro Industries</b> Mohammed Makdad		5585 9126	✓	✓	✓
<b>ITS Co. (Traffic Signals)</b> Abdul Rahman		5583 7946	✓	✓	✓

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>Midwil</b> Mahmoud Khaleel Midwil		5550 7266	✓	✓	✓
<b>Powerman</b> Mr Manoj		5553 7035	✓	✓	✓
<b>Qatar Asphalt</b> Saamer Turkh		5550 0384	✓	✓	✓
<b>QCTC</b> Shadi Al Halabi		5543 4551	✓	✓	✓
<b>Seashore</b> Sulfikkar Ali		5582 0953	✓	✓	✓
<b>Sigma</b> Adnan Khadir		3394 6863	✓	✓	✓
<b>Traffic Tech</b> Ayman		5581 1516	✓	✓	✓
<b>Trags</b> Mr Noe		5553 1107	✓	✓	✓
<b>Infrastructure Affairs</b>					
<b>Manager Expressway</b> Yousef A.Rahman Al-Emadi	4495 0700	5588 9644	✓	✓	✓
<b>Manager Local Roads &amp; Drainage</b> Saoud Ali A Al-Tamimi	4495 0006	5587 7300	✓	✓	✓
<b>Manager Drainage Design</b> Nasser Yousef A Fakhroo	4495 0300	5551 1642	✓	✓	✓
<b>Manager Road Design</b> Abdulla Ahin A A Mohd	4495 0123	5556 8997	✓	✓	✓
<b>Manager Drainage Project</b> Khalid Saif F S Al-Khayareen	4035 3111	5551 1186	✓	✓	✓
<b>A/Head of Sewage Network Projects</b> Hassan Mohamed M. Hassain	4492 6161	3388 6888	✓	✓	✓
<b>PB</b>					
<b>Local Roads and Drainage PMC Director</b> Dr. Mohammed Nazier	4495 1619	6684 1231	✓	✓	✓
<b>Deputy Programme Director – Delivery</b> Peter Yendall	4495 6458	3337 3279	✓	✓	✓
<b>Commercial Director</b> Mahomed Essof	4495 0933	6620 4773	✓	✓	✓
<b>Design and Construction Director</b> Ahmed Jaber	4035 3289	3393 3657	✓	✓	✓
<b>Deputy Construction and Logistics Engineer</b> Peter Finegan	4495 6811	3302 8673	✓	✓	✓
<b>Stakeholder &amp; Utilities Manager</b> Kamal El Saloussy	4495 6583	3370 4134	✓	✓	✓
<b>Programme Support Manager</b> Khaled Khalil	4495 3512	3374 1674	✓	✓	✓

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
PMC – ADM – Qatar South Alan Caldwell	4495 6205	6625 8362	✓	✓	✓
PMC – ADM – Doha North Mussab YASEN	4495 6205	3314 7132	✓	✓	✓
PMC – ADM – Doha South Laith Al Saadi	4495 1630	6613 5747	✓	✓	✓
PMC – ADM – Doha West Farhad Jafari	4495 3462	5503 3682	✓	✓	✓
PWA- Engineer Qatar North Hamad Al Bader	4495 3455	6660 5006	✓	✓	✓
PWA- Engineer Qatar North Basem Atli	4495 0640	5585 1322	✓	✓	✓
PWA- Engineer Qatar North Fahad Abdelati Al Asad	4495 1714	33322625	✓	✓	✓
PWA- Engineer Qatar South Mohamed Idrees	4492 6467	3382 5981	✓	✓	✓
PWA- Engineer Qatar South Mustafa Shriem	4495 0275	7008 7856	✓	✓	✓
PWA- Engineer Qatar South Bassam Albokai	4492 6170	5565 9901	✓	✓	✓
PWA- Engineer Qatar South Fatema Salat		5000 5887	✓	✓	✓
PWA- Engineer Qatar South Mahmoud shalaldeh		5576 9593	✓	✓	✓
PWA- Engineer Qatar South Fahad Hussain Suliman		3353 3538	✓	✓	✓
PWA- Engineer Qatar South Hisham Abushaqra		5047 8836	✓	✓	✓
PWA- Engineer Qatar South Hamad Salem		7777 9727	✓	✓	✓
PWA- Engineer Qatar South Mohanad Abu Hassan		5595 4597	✓	✓	✓
PWA- Engineer Doha North Mohamed Tolba	4495 1682	3334 7170	✓	✓	✓
PWA- Engineer Doha North Jamal Ajina	4495 0557	5586 8377	✓	✓	✓
PWA- Engineer Doha North Shailendra Sharma	4495 1653	6648 1970	✓	✓	✓
PWA- Engineer Doha South Brendan Pereira		6649 3468	✓	✓	✓
PWA- Engineer Doha South Ayman Sayed		6641 2140	✓	✓	✓
PWA- Engineer Doha South Ahmed Abushanab		6674 9800	✓	✓	✓
PWA- Engineer Doha South Abraham Ulod		5540 6339	✓	✓	✓

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
PWA- Engineer Doha West Mario Fajardo		5564 1563	✓	✓	✓
PWA- Engineer Doha West Rida Obaid	4495 0819	5528 8628	✓	✓	✓
PWA- Engineer Doha West Mooza Al-Sowaidi	4035 3131	5075 0721	✓	✓	✓
PWA- Engineer Doha West Hassan Ezzat		5590 0627	✓	✓	✓
PMC - Construction Engineer Qatar South Mohammed El Mustafa Omer		3391 0645	✓	✓	✓
PMC - Construction Engineer Qatar South Yasseen Assaad		6651 7849	✓	✓	✓
PMC - Construction Engineer Qatar South Saleh Al Qawasmeh		6601 9228	✓	✓	✓
PMC – Construction Engineer Doha West Mahmoud Haggag		5512 8925	✓	✓	✓
PMC - Construction Engineer Doha West Faizul Faiz		6670 9567	✓	✓	✓
PMC - Construction Engineer Doha West Ahmed Dheidel		6622 6495	✓	✓	✓
PMC - Construction Engineer Doha North Shaik Kaleemuddin		6672 6161	✓	✓	✓
PMC - Construction Manager Doha North Abdel Rahim Al Zubeidi		5552 1027	✓	✓	✓
PMC - Construction Engineer Doha North Ayman Saleh		5039 8905	✓	✓	✓
PMC - Construction Engineer Doha South Zaid Al Salah		5545 2641	✓	✓	✓
PMC - Construction Engineer Doha South Sayed Metwaly		5544 7351	✓	✓	✓
PMC - Construction Engineer Doha South Tarek Hussein		5524 9985	✓	✓	✓
PMC - Construction Engineer Doha South Mohammed Farrag		6617 1685	✓	✓	✓
PMC - Construction Manager Doha South Akram Ashour		3392 6870	✓	✓	✓
PMC - Construction Engineer Doha South Hamza ElHeresh		7770 8506	✓	✓	✓
PMC Health & Safety Manager Santhosh Santha Ayyappan	4492 6536	3371 2470	✓	✓	✓
PMC Health and Safety Specialist Doha West and North Suresh Chandran	4492 6890	6650 7672	✓	✓	✓
PMC Health and Safety Specialist Qatar South Ajit Kumar Oonikrishnan	4492 3585	6649 8744	✓	✓	✓
PMC Health and Safety Specialist Doha South Qatar North Santhosh Iyer	4492 6842	6651 0284	✓	✓	✓

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>PMC Senior Construction Engineer</b> Masum Noor	4035 3269	3048 2785	✓	✓	✓
<b>Construction Engineer</b> Muntasir Yousif	4035 3489	5544 5929	✓	✓	✓
<b>GEC - Project Director Qatar South</b> Werner Van Straaten		6684 0979	✓	✓	✓
<b>GEC - Project Director DAR</b> Imad A. Rimawi		5582 5044	✓	✓	✓
<b>GEC - Project Director ITAL</b> Giovanni Anello	4435 3652	7076 0394	✓	✓	✓
<b>GEC Project Director Doha North</b> Liam Kirk	4424 5000	3357 5171	✓	✓	✓
<b>GEC Project Director Doha South</b> Ziad El-Balbisi	4405 8459	5013 2023	✓	✓	✓
<b>GEC Construction Director Qatar North</b> Ralph Shackleton		5003 4722	✓	✓	✓
<b>GEC Construction Director Qatar South</b> Eyad Almunayer		3373 9147	✓	✓	✓
<b>GEC Construction Director Doha South</b> Mohamed Boutaleb		5547 2268	✓	✓	✓
<b>GEC - Construction Director Doha West</b> Ibrahim N. F. Tleel		6655 3247	✓	✓	✓
<b>GEC - Senior Resident Engineer DAR</b> Haroun Ahmad		5552 3562	✓	✓	✓
<b>GEC- Senior Resident Engineer Doha North</b> Ashraf Elsayed		5519 0780	✓	✓	✓
<b>GEC- Senior Resident Engineer Doha North</b> Amr Salah		3323 1279	✓	✓	✓
<b>GEC- Senior Resident Engineer Doha North</b> Hanif Siddiqui		5015 1224	✓	✓	✓
<b>GEC Senior Resident Engineer Doha North</b> Dennis Rush		3395 9303	✓	✓	✓
<b>GEC- Resident Engineer Doha North</b> Ayman Mahmoud		5044 3709	✓	✓	✓
<b>GEC- Resident Engineer Doha North</b> Christopher Beddoes		3375 4717	✓	✓	✓
<b>GEC- Resident Engineer Doha North</b> Mohammad Saleh Memon		3385 0912	✓	✓	✓
<b>GEC Resident Engineer Doha South</b> Spyridon Trikis		6652 0827	✓	✓	✓
<b>GEC Resident Engineer Doha South</b> Rajendra Kapoor		5587 5150	✓	✓	✓
<b>GEC Resident Engineer Doha South</b> Damien Hughes		3345 5750	✓	✓	✓
<b>GEC Resident Engineer Doha South</b> Rajendra Kapoor		6616 2795	✓	✓	✓

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>GEC- Senior Resident Engineer Qatar North</b> Jeremy Grieve	4037 0781	5001 5851	✓	✓	✓
<b>GEC- Senior Resident Engineer Qatar North</b> Mohammad Saleh Memon		3385 0912	✓	✓	✓
<b>GEC- Senior Resident Engineer Qatar North</b> Alaa Almadi		3354 7417	✓	✓	✓
<b>GEC- Senior Resident Engineer Qatar North</b> John Murray		3369 0918	✓	✓	✓
<b>GEC Senior Resident Engineer Qatar South</b> Sultan Shomr		3029 7766	✓	✓	✓
<b>GEC Senior Resident Engineer Qatar South</b> Sam Hasan		3397 6493	✓	✓	✓
<b>GEC Senior Resident Engineer Qatar South</b> Mohamed Sharaiah		5587 7942	✓	✓	✓
<b>GEC -Resident Engineer Qatar South</b> Hesham Alassadi		5557 7514	✓	✓	✓
<b>GEC - Resident Engineer Qatar South</b> Islam Suleiman		6697 4566	✓	✓	✓
<b>GEC - Resident Engineer Qatar South</b> Watheq Abu Zaid		5005 1899	✓	✓	✓
<b>GEC - Resident Engineer Qatar South</b> Sunil Parthasarathy		5023 5236	✓	✓	✓
<b>GEC - Resident Engineer Qatar South</b> Mahaboob Subuhani Rajakani		3349 4696	✓	✓	✓
<b>GEC Senior Resident Engineer Doha West</b> Shamel Awadallah		3372 1204	✓	✓	✓
<b>KBR</b>					
<b>Expressways PMC Director</b> David O'Reilly		7448 2035	✓	✓	✓
<b>Deputy PMC Director</b> Matt Jacobs		7448 2026	✓	✓	✓
<b>Operations Manager</b> John Torley		6667 8715	✓	✓	✓
<b>HSE Manager</b> Kevin Angell		7479 5687	✓	✓	✓
<b>Senior PR Officer</b> Natacha Leopold		7793 1364	✓	✓	✓
<b>Logistics Coordinator</b> David Heywood		3148 8829	✓	✓	✓
<b>QHSE Manager</b> Allan McEwan		5520 6346	✓	✓	✓
<b>ADM North</b> Mark Mussell		5551 4767	✓	✓	✓
<b>ADM Orbital</b> Paul Cartledge		3117 5858	✓	✓	✓

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>ADM South</b> Padraic Black		7448 2034	✓	✓	✓
<b>FPS Programme</b>					
<b>Programme Coordinator</b> Hugo Miguel Da Silva Ferreira	4452 4403	5535 0604	✓	✓	✓
<b>Flooding Register Coordinator</b> Olga Gomez Tello	4485 2142	5062 9707	✓	✓	✓
<b>Asset Management Risk Management</b> Goncalo Filipe Da Silva Godinho		3369 8014	✓	✓	✓
<b>Planning Engineer</b> Ivan Lowe		3320 3817	✓	✓	✓
<b>GIS Mapping Support</b> Nina MacVinish		5513 7959	✓	✓	✓
<b>Construction Coordinator</b> Wael Kamaleldin Abdulkhalek		6677 8971	✓	✓	✓
<b>Deputy Construction Coordinator</b> Mohamed Galal Mohamed Tharwat		7050 9020	✓	✓	✓
<b>Design Coordinator</b> Tim Kelly		6699 7501	✓	✓	✓
<b>Stakeholder &amp; Customer Management</b> Meshal Hassen M H Al-Dahname		7787 7827	✓	✓	✓
<b>Other Key Contacts</b>					
<b>Senior Projects Engineer</b> Ahmed Abunahia	4495 0674	5553 1975	✓	✓	✓
Saeed Al Mazroai		5550 9300	✓	✓	✓
Ali Abdullatif Alkuwari		5500 0679	✓	✓	✓

### External Stakeholder Agencies

<b>Civil Aviation (weather forecast)</b> <i>Primary Drainage Liaison – Aziz Hassan Secondary Drainage Liaison – SCADA Control Room Duty Engineer</i>	4455 7333 4010 2237 4010 2238	
<b>Police</b> <i>Primary Drainage Liaison - Mohamed Al Malki Secondary Drainage Liaison - Ahmed Sharif</i>	999	
<b>Fire Service</b> <i>Primary Drainage Liaison - Mohamed Al Malki Secondary Drainage Liaison - Khalid Al Jaberi</i>	999	
<b>Kahramaa (Electricity, Water)</b> <i>Primary Drainage Liaison - Jamal Al Ansari Secondary Drainage Liaison - Khalid Al Jaberi Electricity Networks Director Electricity Distribution Manager</i>	991  5553 2777 5552 2244	
<b>Emergency Services (National Command Centre)</b> <i>Primary Drainage Liaison - Ahmed Sharif</i>	2345559	5500 0679
<b>Head of Command and Control</b> <i>Maj. Ali Abdulrahman Al Kuwari</i>	2345599	
<b>Assistant to the Head of Command and Control</b> <i>Capt. Khalid Abdulrahman Al Ali</i>		
<b>Officer-on-duty (24hours)</b>	4433 0404 4452 6310 5521 9933	

	Daytime Phone Number	SMS Message Number	Contact on Alarm Level		
			1	2	3
<b>Ministry of Municipality and Environment</b> <i>Primary Drainage Liaison - Mohamed Al Malki Secondary Drainage Liaison - Khalid Al Jaberi</i>	184 or 4426 6666				
<b>Chairman Rainy Season Emergency Committee</b> <i>Safar Al Shafi</i>		5500 4030	✓	✓	✓
<b>Quality Department Director</b> <i>Fayqa Abdullah Ashkanani</i>	4434 8660	5555 6336	✓	✓	✓
<b>Assistant of Quality Department Director</b> <i>Thafer Mohammad Al Hajri</i>	4434 8252	5585 7008	✓	✓	✓
<b>Organisational Development Specialist (Quality Dept)</b> <i>Bassam Issa Mohammad</i>	4434 8243	5587 1773	✓	✓	✓

**Assets Affairs and Baladiya Support Contact List (for use up to Alert)**

Al Rayyan Municipality			Al Khor & Al Thakhira Municipality		
Director of Municipality	Rashid Al Noaimi	3329 2444	Director of Municipality	Mohd Saleh Al Attan	5556 6881
Services Affairs Manager	Saleh Al Hadwan	5563 6058	Services Affairs Manager	Hamad Al Muraikhi	5588 8600
Other Staff	Hassan Ali Farraj Murtada Kagam Ismail Alnager	3325 1364 3329 2666 7714 3163			
DNO&M Support	Mouatsum Elsouda David Pereira	5502 2121 3366 3901	DNO&M Support	Abdullah Kumeh Roberto Porto	3315 0151 6642 0782
RM Support	Rogelio Reyes Mohammed Fasiuddin	7717 9402 5597 0126	RM Support	Mohd Firdaus Prabhakar Kumar	3343 8269 6675 7482
Doha Municipality			Umm Salal Municipality		
Director of Municipality	Jamal Al Noaimi	5503 2020	Director of Municipality	Mohammed Al Sahoozi	5555 5722
Services Affairs Manager	Ahmed Al Yafei	3300 6551	Services Affairs Manager	Mansour Al Noimi	5580 6633
Other Staff	Abdulla Al-Mass	5533 3253 4426 8888 4434 8867	Other Staff	Imad Al Mhjoob Abdull Ibrahim Said Hassan	6613 6165 7730 8090 6678 7472
DNO&M Support	Tamer Yahya Rui Pomares	5540 9916 5545 7853	DNO&M Support	Ahmed Idress Mohamed Zougari	3383 7820 5591 0608
RM Support	Labernie Galang Mariano Jabines	3349 2841 5518 7250	RM Support	Fernan Palete Ron Carlo Pingol	5512 4463 3141 6868
Al Wakrah Municipality			Al Shamal Municipality		
Director of Municipality	Mansoor Al Bunain	5553 2219	Director of Municipality	Hamad Al Mannai	5555 5114
Services Affairs Manager	Mohd. Al Khater	5556 6115	Services Affairs Manager	Hassan Al Fehani	5507 7550
Other Staff	Mahmood	7719 1198	Other Staff	Hazem Ghasoub	5580 2191
DNO&M Support	Shakeel Ahmad Mohamed Arif	5559 4207 5597 9571	DNO&M Support	Bashir Musa Ayman Zagrot	7005 1444 6680 7636
RM Support	John Paul Mamawal Anil Krishna Biswas	7758 2541 3354 7625	RM Support	Samuel Yeeda Thangapandian M	6647 6164 3386 7665
Al Sheehaniya Municipality			Al Daayen Municipality		
Director of Municipality	Jaber Al Jaber	5586 8555	Director of Municipality	Rashid Al Khayareen	5583 3393
Services Affairs Manager	Ateeg Al Breidi	5589 6664	Services Affairs Manager	Rashid Al Khayareen	5583 3393
Other Staff	Mahsop Ahmad	5555 1939	Other Staff	Ali Al Hamidi Saif Eissa Samy Abosetta Akram Khatab Saad Alkwari	5552 2141 5580 8077 5577 6353 5569 1712 3000 4303
DNO&M Support	Hussam Mohsen Jose Manuel	3103 3301 6642 7650	DNO&M Support	Frederico Brotas Mohamad Jichi	6627 3164 6677 4243
RM Support	Yahsin Sahipa Wilfredo Salgado	7732 0477 3365 8647	RM Support	Macarao Mama Javeed Salim Wani	3398 1594 7046 3305
Mechanical Equipment Department					
Head of Maintenance and Repair Section	Saleh Al Merri	5586 8454			
Assistant Manager MED	Marzouq Al Msafri	5555 0277			
DNO&M Support	Yaser Al-Kharaz Adnan Mohd Abdulla Mohsin Dura	5554 2117 7001 2306 6607 7670			
RM Support	Edward Caleon Suresh Kumar	3349 3639 3349 8099			

## APPENDIX C RAINY SEASON HOTSPOTS, ASSETS AND RESOURCES

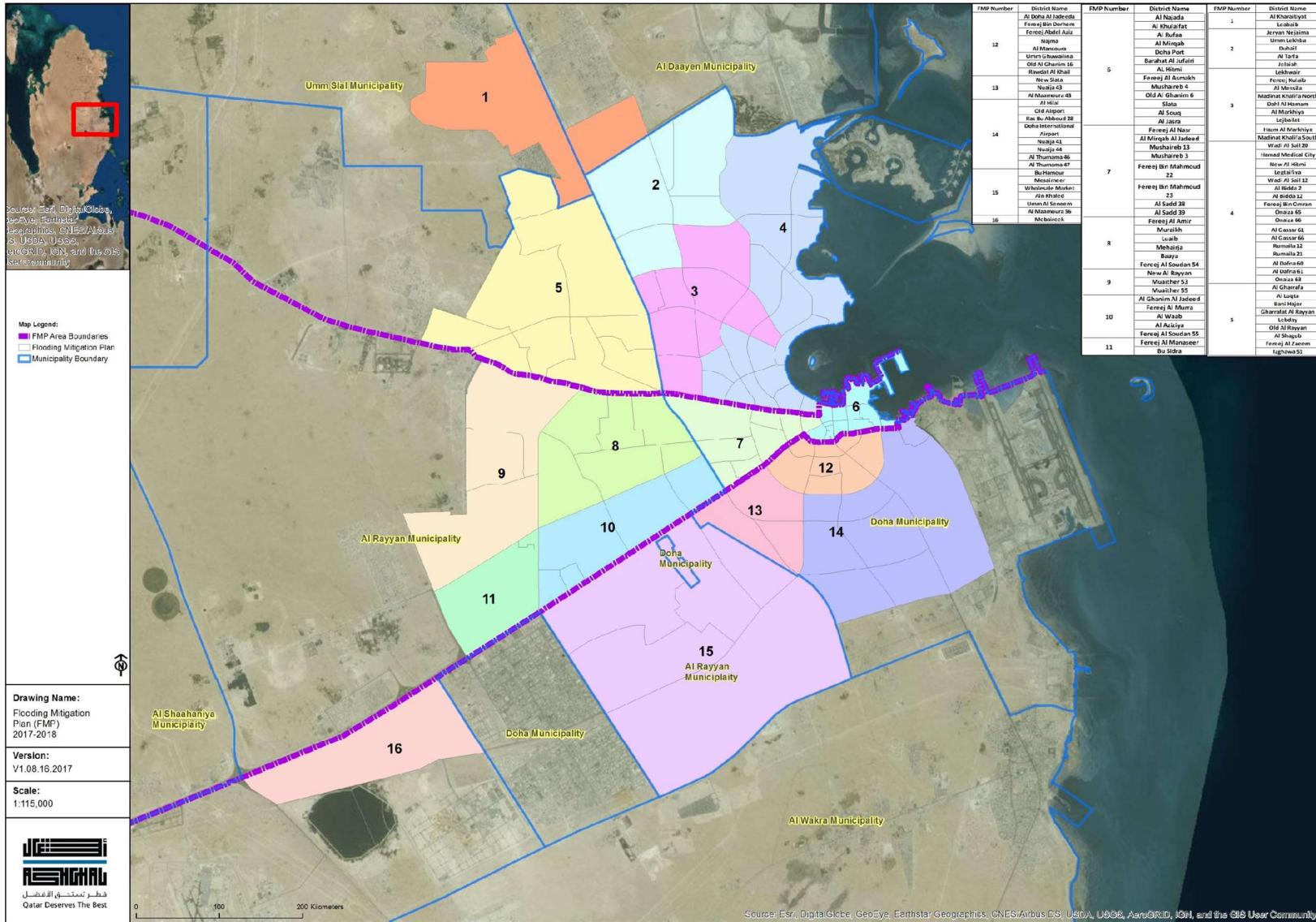
This Appendix presents the following information:

- Drainage Networks Section Map of Areas and Zones for Flooding Mitigation Plans (FMPs x 16)

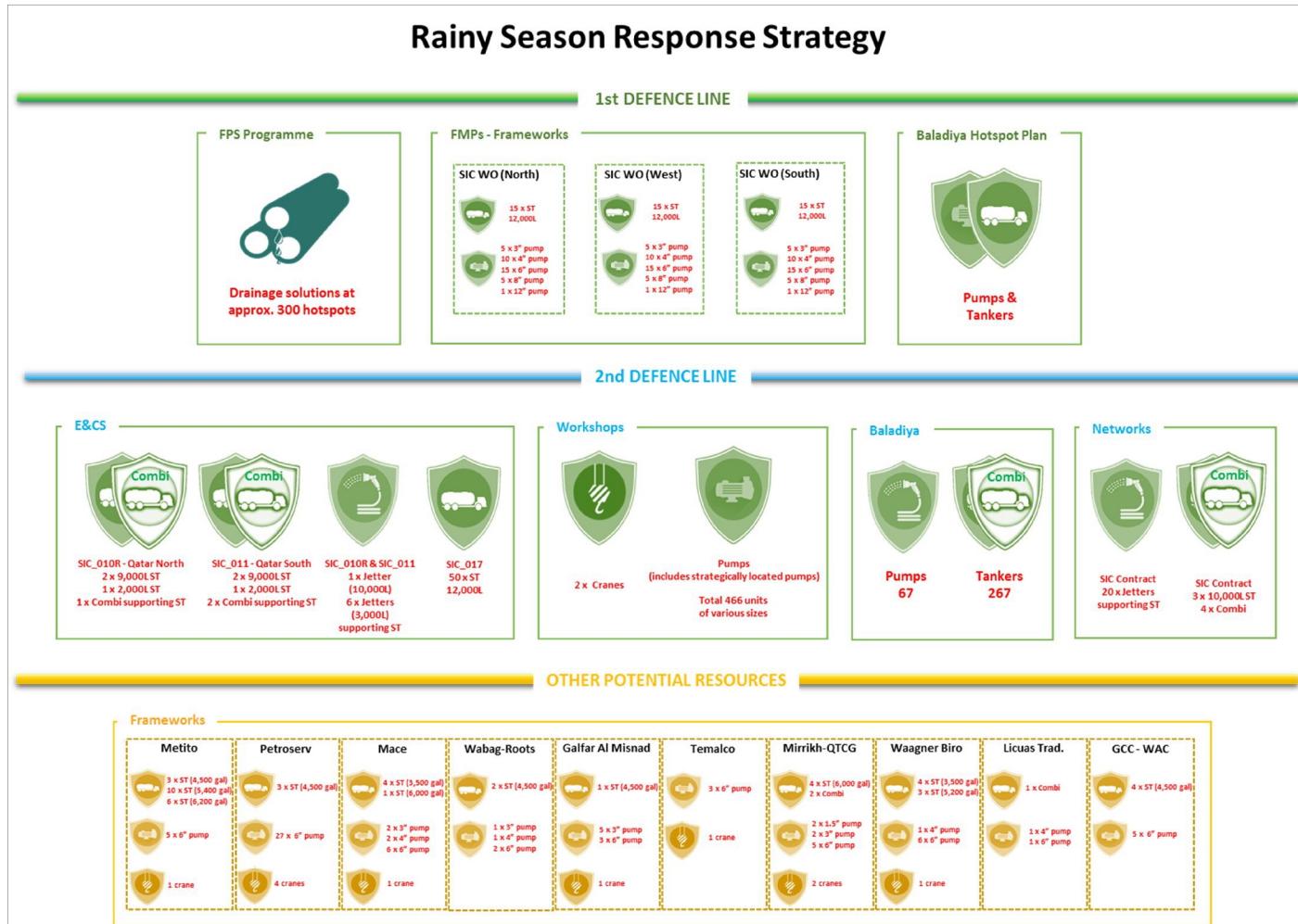
SOUTH		WEST		NORTH	
FMP	District	FMP	District	FMP	District
12	Al Doha Al Jadeeda	6	Al Najada	1	Al Kharaitiyat
	Fereej Bin Derhem		Al Khulaifat		Leabaib
	Fereej Abdel Aziz		Al Rufaa	2	Jeryan Nejaima
	Najma		Al Mirqab		Umm Lekhba
	Al Mansoura		Doha Port		Duhail
	Umm Ghuwallina		Barahat Al Jufairi		Al Tarfa
	Old Al Ghanim 16		AL Hitmi		Jelaiyah
	Rawdat Al Khalil		Fereej Al Asmakh		Lekhwaib
13	New Slatra		Mushaireb 4		Fereej Kulaib
	Nuaija 43		Old Al Ghanim 6		Al Messila
	Al Maamoura 43		Slatra	3	Madinat Khalifa North
14	Al Hilal	7	Al Souq		Dahl Al Hamam
	Old Airport		Al Jasra		Al Markhiya
	Ras Bu Abboud 28		Fereej Al Nasr		Lejbailat
	Doha International Airport		Al Mirqab Al Jadeed		Hazm Al Markhiya
	Nuaija 41		Mushaireb 13		Madinat Khalifa South
	Nuaija 44		Mushaireb 3		Wadi Al Sail 20
	Al Thumama 46		Fereej Bin Mahmoud 22		Hamad Medical City
15	Al Thumama 47		Fereej Bin Mahmoud 23		New Al Hitmi
	Bu Hamour		Al Sadd 38		Legtaifiya
	Mesalmeeer		Al Sadd 39		Wadi Al Sail 12
	Wholesale Market	8	Fereej Al Amir		Al Bidda 2
	Ain Khaled		Muraikh		Al Bidda 12
16	Umm Al Seneem		Luailb		Fereej Bin Omran
	Al Maamoura 56		Mehairja		Onalza 65
	Mebaireek		Baaya		Onalza 66
			Fereej Al Soudan 54		Al Gassar 61
			New Al Rayyan		Al Gassar 66
			Mualther 53		Rumaila 12
			Mualther 55		Rumaila 21
		9	Al Ghanim Al Jadeed		Al Dafna 60
			Fereej Al Murra		Al Dafna 61
			Al Waab		Onalza 63
			Al Aziziya		Al Gharrafa
		10	Fereej Al Soudan 55		Al Luqta
			Fereej Al Manaseer		Bani Hajer
		11	Bu Sidra		Gharrafat Al Rayyan
					Lebday
					Old Al Rayyan
					Al Shagub
					Fereej Al Zaeem
					Izghawa 51

- Tanker and other equipment availability from DNO&M, Contractors and Baladiya
- Operational response of the Pump Station Section regarding inspection of Key Underpasses

## Assets Affairs DNO&M Drainage Networks Section Map of Areas and Zones for Hotspot Flooding Mitigation Plans (FMPs x 16)



## Tanker and other equipment availability from DNO&M, Contractors and Baladiya



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**Operational response of the Pump Station Section regarding inspection of Key Underpasses**